



FACET Guided Training



Outline

- **Starting FACET**
- **Playback Mode Setup**
 - Pause/Resume/Stop
 - Filter Setup
 - Plot Data Setup
- **Flight Plan Database**
- **Sector Count Analysis**
- **Planning**



Outline

⇒ Starting FACET

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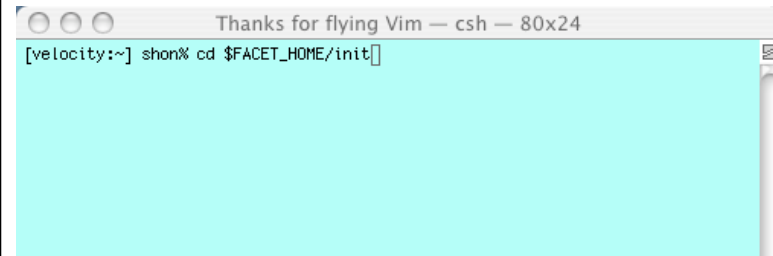
Starting FACET

Step 1: Open a terminal window

A screenshot of a terminal window titled "Terminal — csh — 80x24". The prompt is "[velocity:~] shon%".

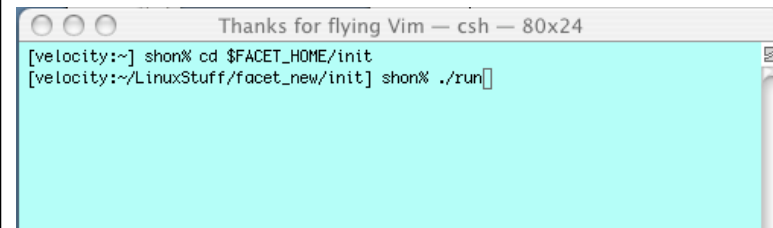
```
Terminal — csh — 80x24
[velocity:~] shon%
```

Step 2: `cd $FACET_HOME/init`

A screenshot of a terminal window titled "Thanks for flying Vim — csh — 80x24". The prompt is "[velocity:~] shon%". The command `cd $FACET_HOME/init` has been entered.

```
Thanks for flying Vim — csh — 80x24
[velocity:~] shon% cd $FACET_HOME/init
```

Step 3: `./run`

A screenshot of a terminal window titled "Thanks for flying Vim — csh — 80x24". The prompt is "[velocity:~] shon%". The command `cd $FACET_HOME/init` has been entered, and the prompt has changed to "[velocity:~/LinuxStuff/facet_new/init] shon%". The command `./run` has been entered.

```
Thanks for flying Vim — csh — 80x24
[velocity:~] shon% cd $FACET_HOME/init
[velocity:~/LinuxStuff/facet_new/init] shon% ./run
```



Outline

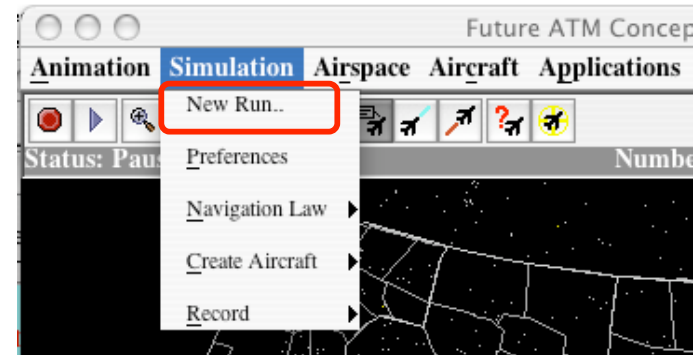
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Playback Mode Setup

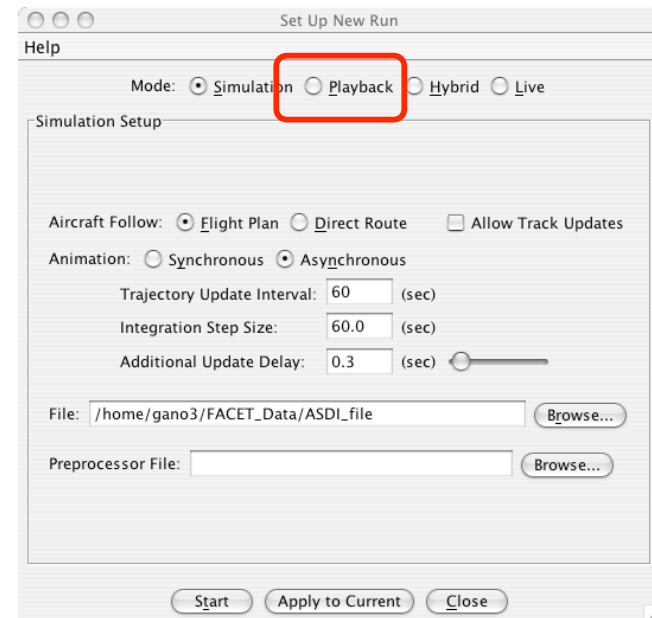
Step 1:

Select the *New Run* menu item from the **Simulation** menu



Step 2:

Select the Playback radio button from the “Set Up New Run” panel.

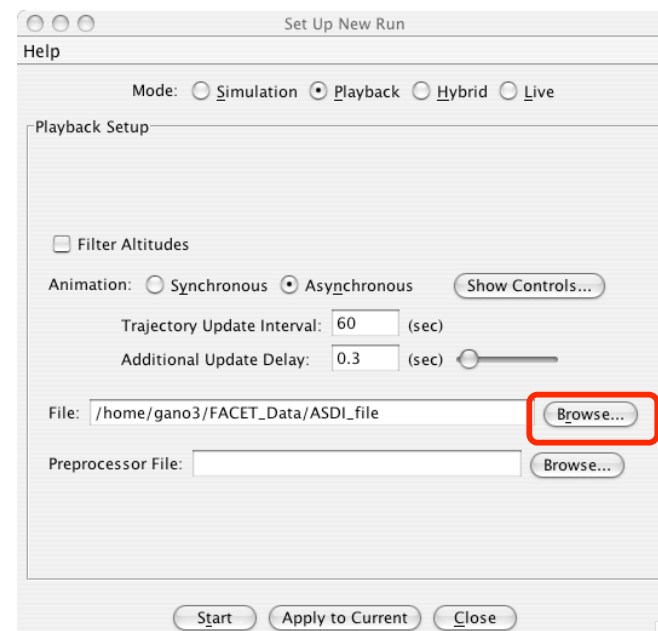




Playback Mode Setup

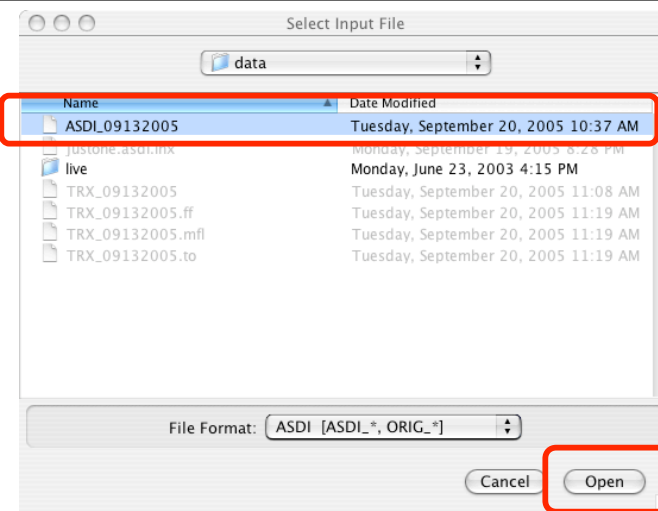
STEP 3:

Set the playback run attributes and select the “Browse” button. By default, none of the attributes should require changing.



STEP 4:

Select the playback input file and press the Open button. The file format filters can be used to choose between ASDI_, TRX_, and HOST_ input files.

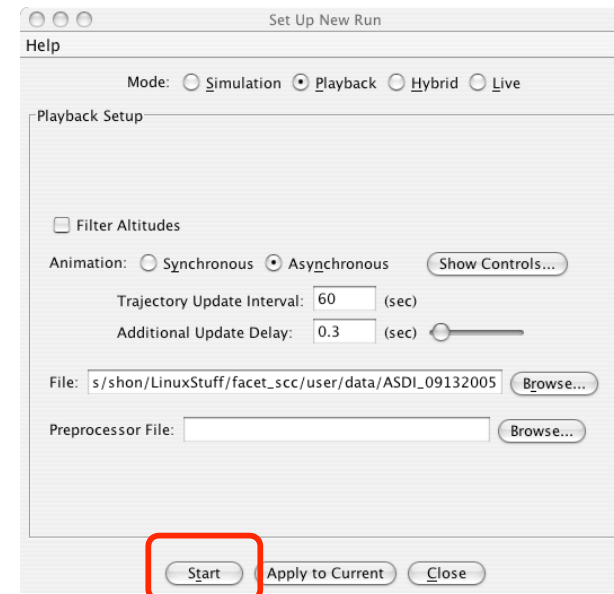




Playback Mode Setup

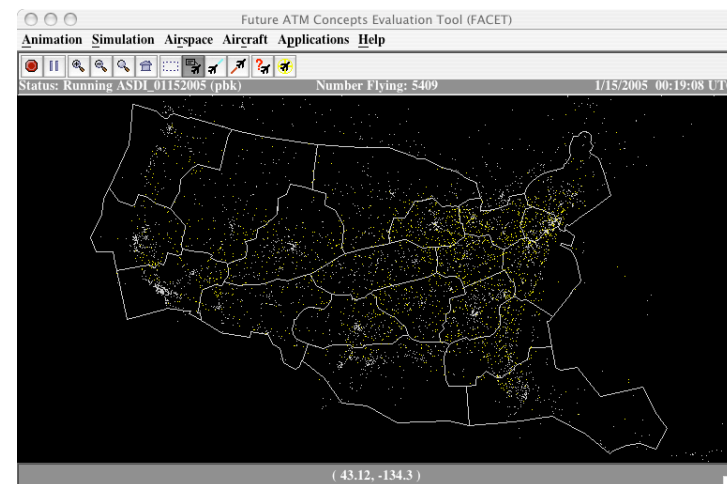
STEP 5:

Press the Start button to initiate the FACET playback session



STEP 6:

Aircraft tracks should begin appearing on the main FACET display.





Outline

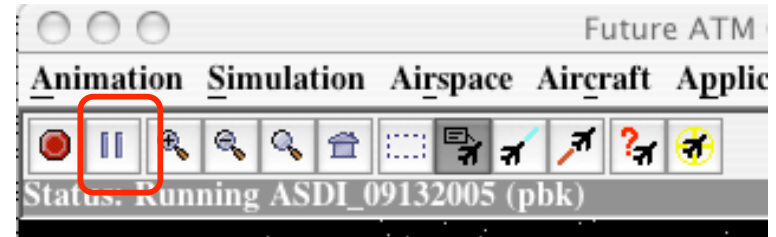
- **Starting FACET**
- **Playback Mode Setup**
 - ⇒ **Pause/Resume/Stop**
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Playback Mode Setup: Pause/Resume/Stop

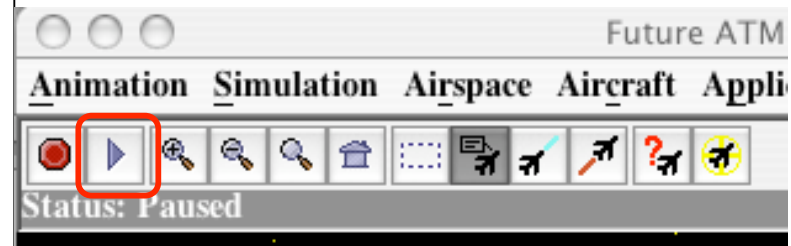
STEP 7:

Press the Pause Icon (two vertical lines) to pause the simulation. Alternatively, *Pause/Resume* can be selected from the **Animation** menu.



STEP 8:

After selecting the pause button, the icon changes to a right pointing rectangle, which is used to designate the Resume button. Notice also the Status field is now set to "Paused".



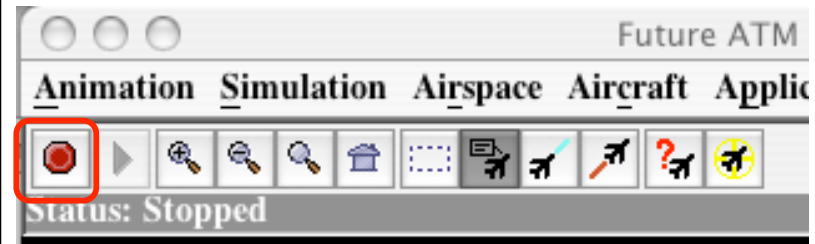


Playback Mode Setup: Pause/Resume/Stop

STEP 9:

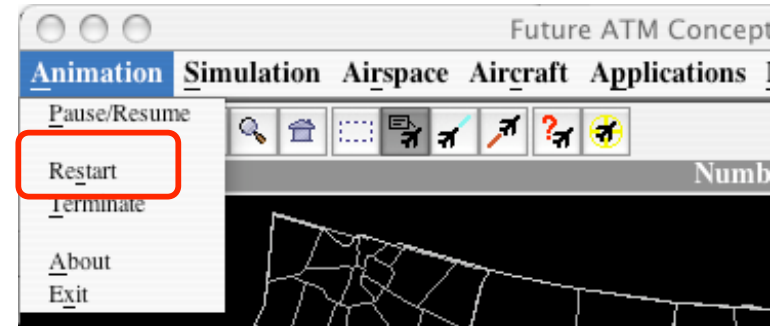
Stopping a playback session is accomplished by selecting the stop-sign icon. Notice that the status becomes “Stopped” after selecting this icon.

Alternatively, *Terminate* can be selected from the **Animation** menu.



STEP 10:

Resuming a previously stopped session is accomplished by selecting *Restart* from the **Animation** menu





Outline

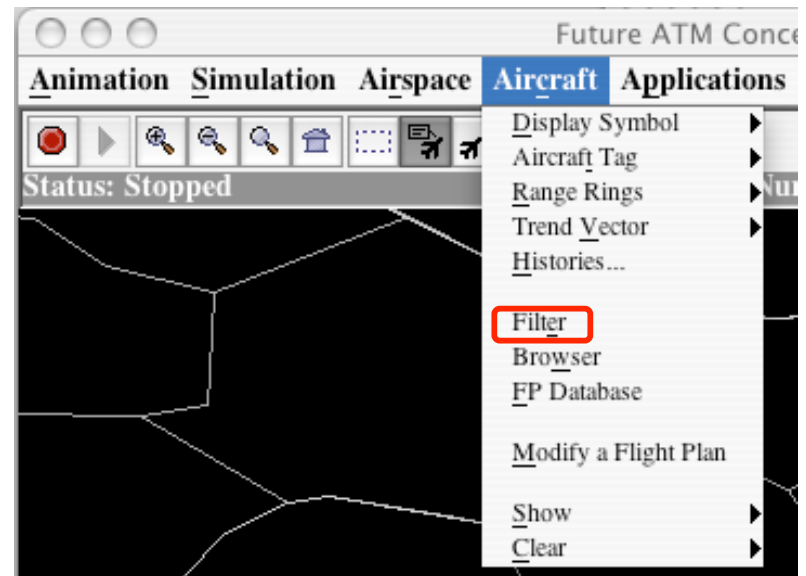
- **Starting FACET**
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Playback Mode Setup: Filter Setup

STEP 11:

Select the *Filter* menu item from the **Aircraft** menu





Playback Mode Setup: Filter Setup

The screenshot shows the 'Aircraft Filter' dialog box with the following sections and annotations:

- Filter Parameters:** A red box highlights the top section containing input fields for Aircraft Id, Airline, Type, Origin (set to ORD), Destination (set to ATL), Flight Level, Center, Sector, Jet Route, Origin Center, Destination Center, Fix, Weight, and Equipage. An arrow points to this box with the label 'Filter setup parameters'.
- Filter Attributes:** A green box highlights the middle section containing 'Filter Color' (a cyan color swatch), 'Choose...' button, 'Aircraft Symbol' (set to Triangle), and checkboxes for 'Show Aircraft', 'Show History', 'Show Flight Plan', and 'Show Data Tag'. An 'Add Filter' button is also present. An arrow points to this box with the label 'Display attributes of the filtered flights'.
- Applied Filters:** A blue box highlights the bottom section, which is a table with columns: Filter, Color, Symbol, Aircraft, History, Flight Plan, Data Tag, and Aircraft List. An arrow points to this box with the label 'List of implemented filters'.
- Predefined filters:** A purple box highlights the bottom-most section containing checkboxes for 'Filter Duplicate Aircraft', 'Filter Out-Of-Bounds Aircraft', and 'Display Filtered Aircraft Only' (which is checked). A 'Remove Filter' button is also present. An arrow points to this box with the label 'Predefined filters'.

A 'Close' button is located at the bottom of the dialog box.



Playback Mode Setup: Filter Setup

STEP 12:

In the Filter panel, enter ORD as the origin airport, and ATL as the destination airport. Also, select the “Show History” check box, deselect the “Show Data Tag” check box, and select the “Display Filtered Aircraft Only” checkbox.

The screenshot shows the 'Aircraft Filter' dialog box with the following settings highlighted by red boxes:

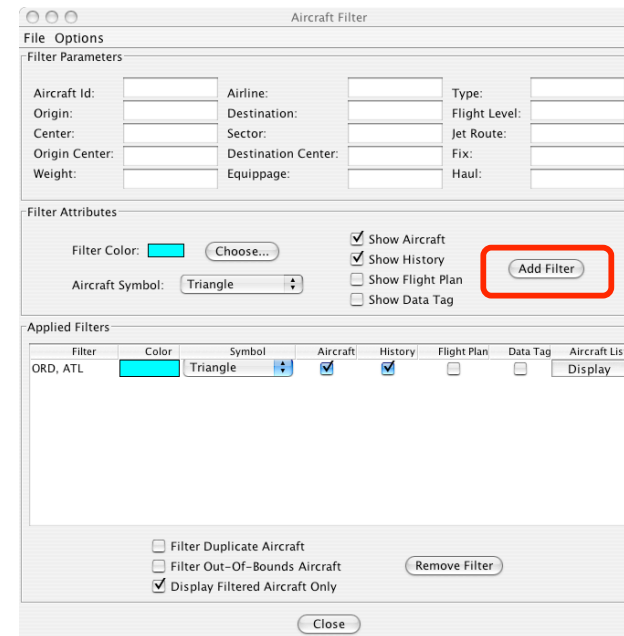
- Filter Parameters:**
 - Origin: ORD
 - Destination: ATL
- Filter Attributes:**
 - ☒ Show History
 - ☐ Show Data Tag
- Applied Filters:**
 - ☒ Display Filtered Aircraft Only



Playback Mode Setup: Filter Setup

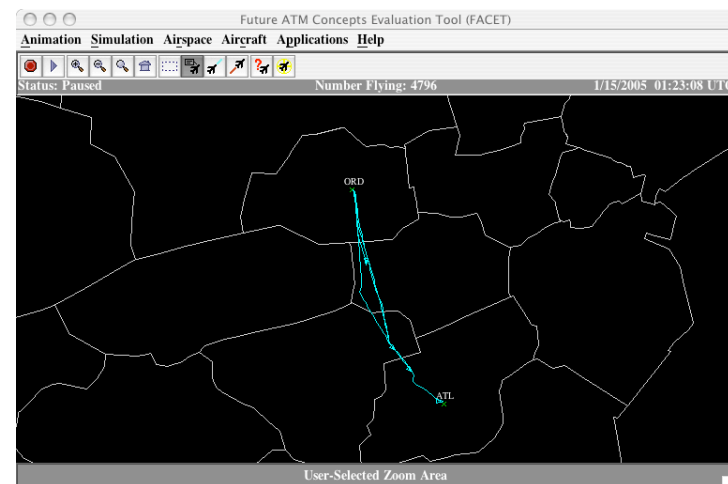
STEP 13:

Pressing the “Add Filter” button results in the filter definition being added to the list of “Applied Filters”.



STEP 14:

The FACET display will automatically be updated to show only the flights departing ORD en route to ATL.





Playback Mode Setup: Filter Setup

STEP 15:

Pressing the “Display” button is used to display a list of filtered flights.

The screenshot shows the 'Aircraft Filter' dialog box. It has a 'File' menu and an 'Options' menu. Under 'Filter Parameters', there are input fields for Aircraft Id, Airline, Type, Origin, Destination, Flight Level, Center, Sector, Jet Route, Origin Center, Destination Center, Fix, Weight, Equipage, and Haul. Under 'Filter Attributes', there is a 'Filter Color' dropdown (set to cyan), an 'Aircraft Symbol' dropdown (set to Triangle), and checkboxes for 'Show Aircraft', 'Show History', 'Show Flight Plan', and 'Show Data Tag'. The 'Add Filter' button is to the right. Under 'Applied Filters', there is a table with columns: Filter, Color, Symbol, Aircraft, History, Flight Plan, Data Tag, and Aircraft List. The first row is 'ORD, ATL' with a cyan color, a triangle symbol, and checked boxes for Aircraft, History, and Flight Plan. The 'Aircraft List' button is highlighted with a red box. At the bottom, there are checkboxes for 'Filter Duplicate Aircraft', 'Filter Out-Of-Bounds Aircraft', and 'Display Filtered Aircraft Only' (checked), along with a 'Remove Filter' button and a 'Close' button.

STEP 16:

Filtered flights can be written to a file by pressing the “Write to Output File” button.

The screenshot shows the 'Filtered Aircraft List' dialog box. It has a 'Filter Attributes' section with 'Filter Name: ORD, ATL', 'Filter Color: cyan', and 'Output File: <none>'. The 'Write To Output File' button is highlighted with a red box. There is also a 'Write Continuously' checkbox. Below this is a table titled 'Filtered Aircraft List' with columns: Aircraft Id, Cid, Type, Flight L, Speed, Headin, Origin, Destin, and Flight. The table contains two rows of data: UAL1294 404 B752 370 470 154... KORD KATL ORD... and DAL769 181 B732 330 407 172... KORD KATL ORD... At the bottom, it says 'Total Aircraft Filtered: 2'.



Playback Mode Setup: Filter Setup

STEP 17:

A filter can be removed by (1) selecting the filter from the list of applied filter, (2) pressing the “Remove Filter” button, and (3) deselecting the “Display Filtered Aircraft Only” checkbox.

Aircraft Filter

File Options

Filter Parameters

Aircraft Id: Airline: Type:
Origin: Destination: Flight Level:
Center: Sector: Jet Route:
Origin Center: Destination Center: Fix:
Weight: Equipage: Haul:

Filter Attributes

Filter Color: Choose... ☒ Show Aircraft
Aircraft Symbol: ☒ Show History ☐ Show Flight Plan ☐ Show Data Tag Add Filter

Applied Filters

Filter	Color	Symbol	Aircraft	History	Flight Plan	Data Tag	Aircraft ID
ORD, ATL	Cyan	Triangle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Display

☐ Filter Duplicate Aircraft
☐ Filter Out-Of-Bounds Aircraft
☒ Display Filtered Aircraft Only Remove Filter

Close



Outline

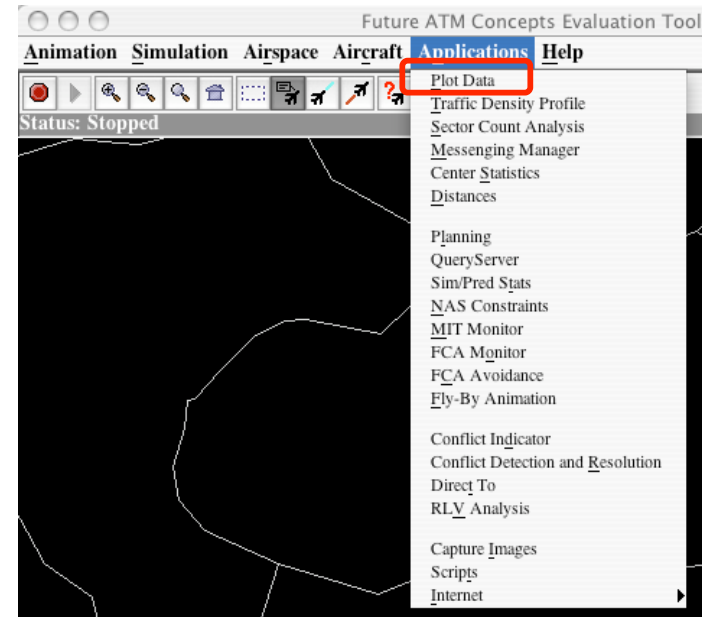
- **Starting FACET**
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 - Individual Aircraft Statistics
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Playback Mode Setup: Plot Data Setup

STEP 18:

Select the *Plot Data* menu item from the **Application** menu





Playback Mode Setup: Plot Data Setup

Plot type selection

Active plot list

Select calculation type

Define aircraft to examine

Filters for selected flights

The screenshot shows a 'Plot Data' window with several sections and controls:

- Help**: A button at the top left.
- Create New Plot**: A section with two tabs: **Calculations** (highlighted with a red box) and **Attributes**.
- Plot**: A dropdown menu showing 'Number of aircraft' and 'vs. time' (highlighted with a green box).
- Where**: A section with radio buttons for 'All known aircraft', 'Aircraft over continental US', 'Aircraft in center/sector' (with a 'Choose...' button), and 'Aircraft in region' (with an 'Edit...' button). This section is highlighted with a blue box.
- Filters**: A section with checkboxes for 'State is flying', 'Departure occurred within last update' (with a 'to/from airport' field), 'No flight plan exists', 'Transitioning from center/sector' (with a 'Choose...' button), 'Flight level is between' (with two input fields and 'and'), and 'Impacted by NOWRAD levels' (with two input fields and 'through'). This section is highlighted with a purple box.
- Current Plots**: A list on the right side of the window, highlighted with a teal box. It contains a 'Remove' button at the bottom.
- Buttons**: 'Add to new window ->', 'Add to selection ->', '<- View', and 'Done'.



Playback Mode Setup: Plot Data Setup

STEP 19:

Select the “Aircraft in center/sector” radio button then the “Choose” button.

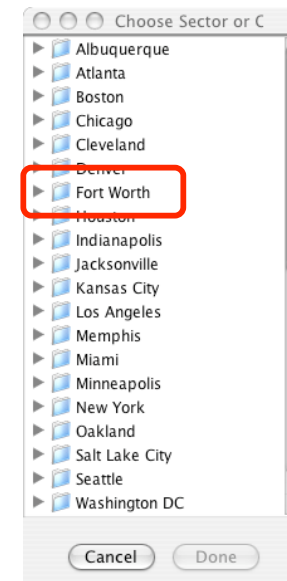
The screenshot shows a 'Plot Data' dialog box with a 'Create New Plot' section. Under the 'Plot' tab, the 'Number of aircraft' is set to 'vs. time'. In the 'For' section, the 'Aircraft in center/sector' radio button is selected and highlighted with a red box. The 'Choose...' button next to it is also highlighted with a red box. Other options include 'All known aircraft', 'Aircraft over continental US', and 'Aircraft in region: <none>'. The 'Where' section has 'State is flying' selected. Other options include 'Departure occurred within last update', 'No flight plan exists', 'Transitioning from center/sector', 'Flight level is between', and 'Impacted by NOWRAD levels'. A 'Done' button is at the bottom. To the right is a 'Current Plots' panel with a 'Remove' button.



Playback Mode Setup: Plot Data Setup

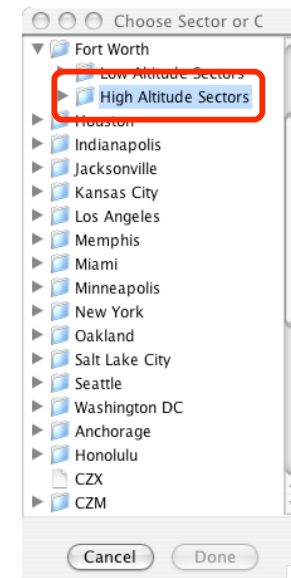
STEP 20:

Open the “Fort Worth” folder



STEP 21:

Open the “High Altitude Sectors” folder

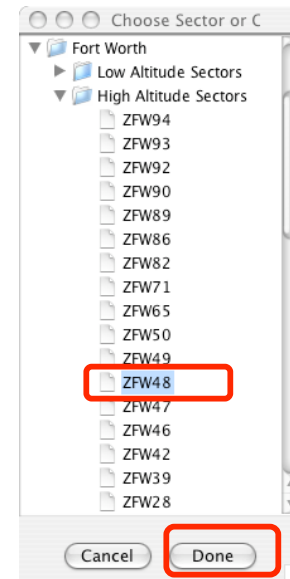




Playback Mode Setup: Plot Data Setup

STEP 22:

Select “ZFW48” from the list of sectors and press the “Done” button.

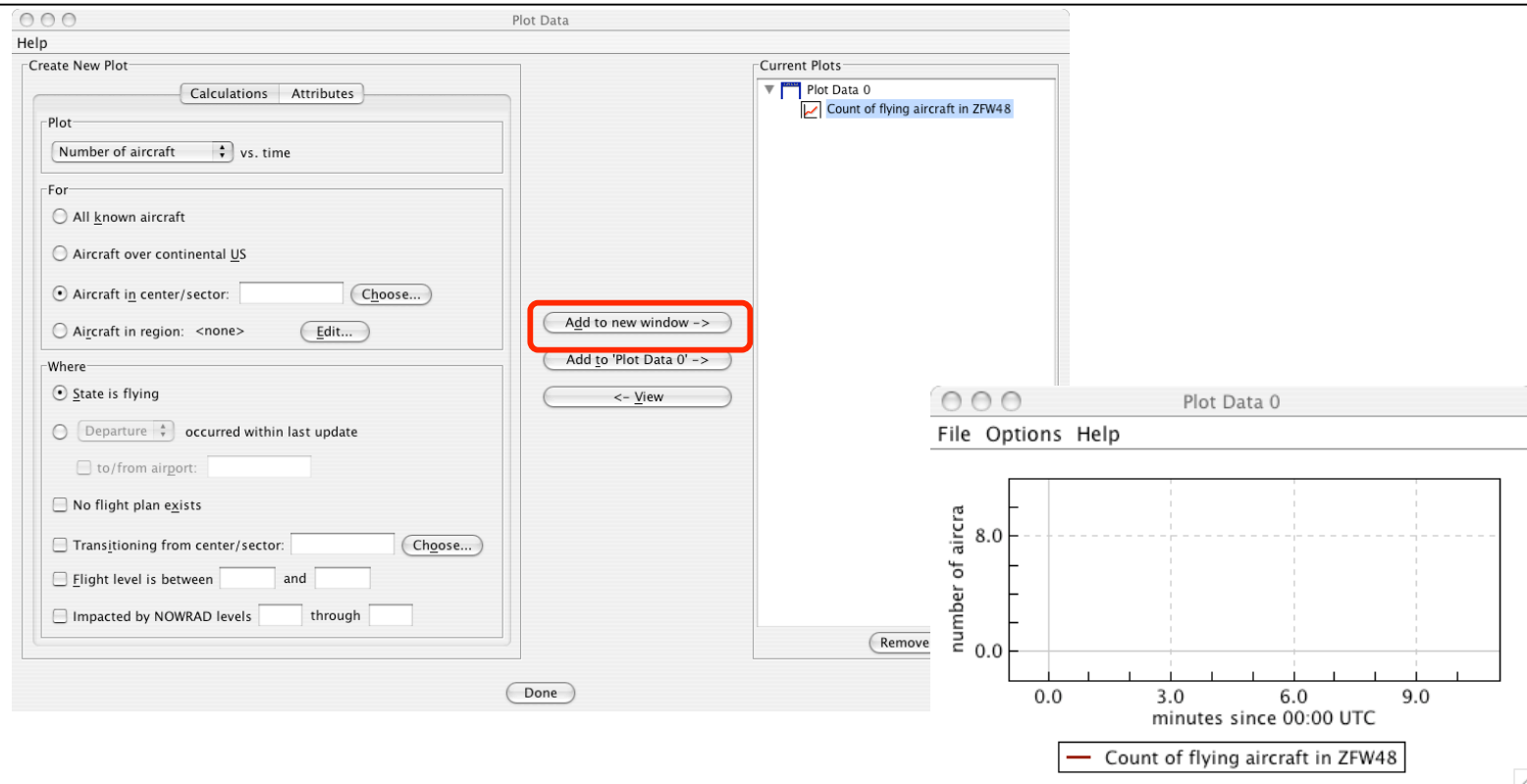




Playback Mode Setup: Plot Data Setup

STEP 23:

Press the “Add to new window” button to add this plot to the list of currently implemented plots. Action leads to a blank plot window being displayed.

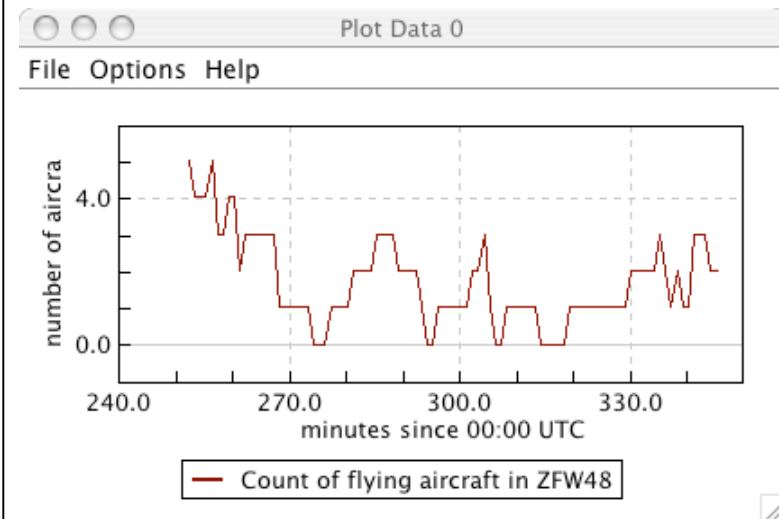




Playback Mode Setup: Plot Data Setup

STEP 24:

The sector counts in the plot window will update automatically as FACET operates in any of its modes.





Outline

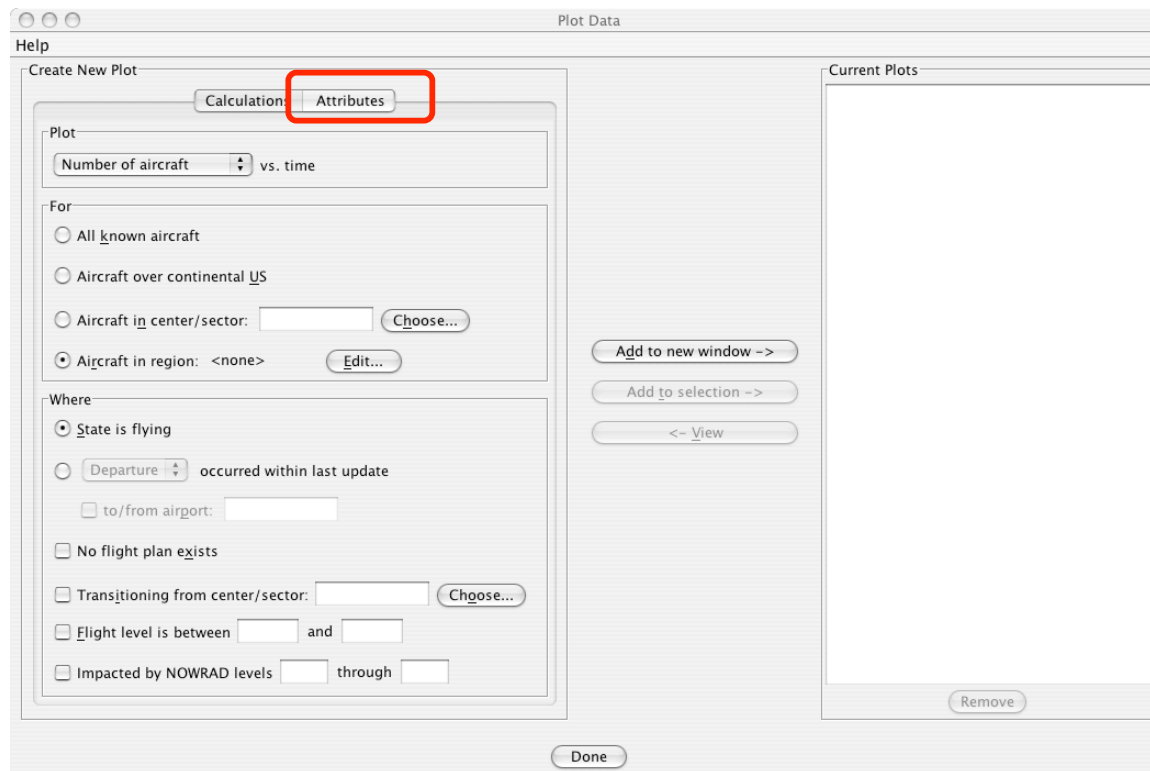
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Playback Mode Setup: Plot Data Setup

STEP 25:

Attributes for individual aircraft can be displayed by first selecting the “Attributes” tab on the Plot Data window.





Playback Mode Setup: Plot Data Setup

STEP 26:

Specify (1) the attributes to be plotted (e.g. ground speed vs. time) and (2) the aircraft call sign of interest

The screenshot shows a software interface titled "Plot Data". It is divided into two main panels: "Create New Plot" on the left and "Current Plots" on the right.

In the "Create New Plot" panel, there are two tabs: "Calculations" and "Attributes". The "Attributes" tab is selected. Under the "Plot:" label, there are two dropdown menus. The first dropdown is set to "Ground speed" and the second is set to "Time". Both dropdowns are highlighted with red rectangles. Below these, under the "For:" label, there is a text input field labeled "Aircraft with ID:" containing the text "UAL263". This input field is also highlighted with a red rectangle.

In the "Current Plots" panel, there is a list of plots. The first plot is "Plot Data 0", which is expanded to show a sub-item "Count of flying aircraft in ZFW48" with a checked checkbox. At the bottom of this panel is a "Remove" button.

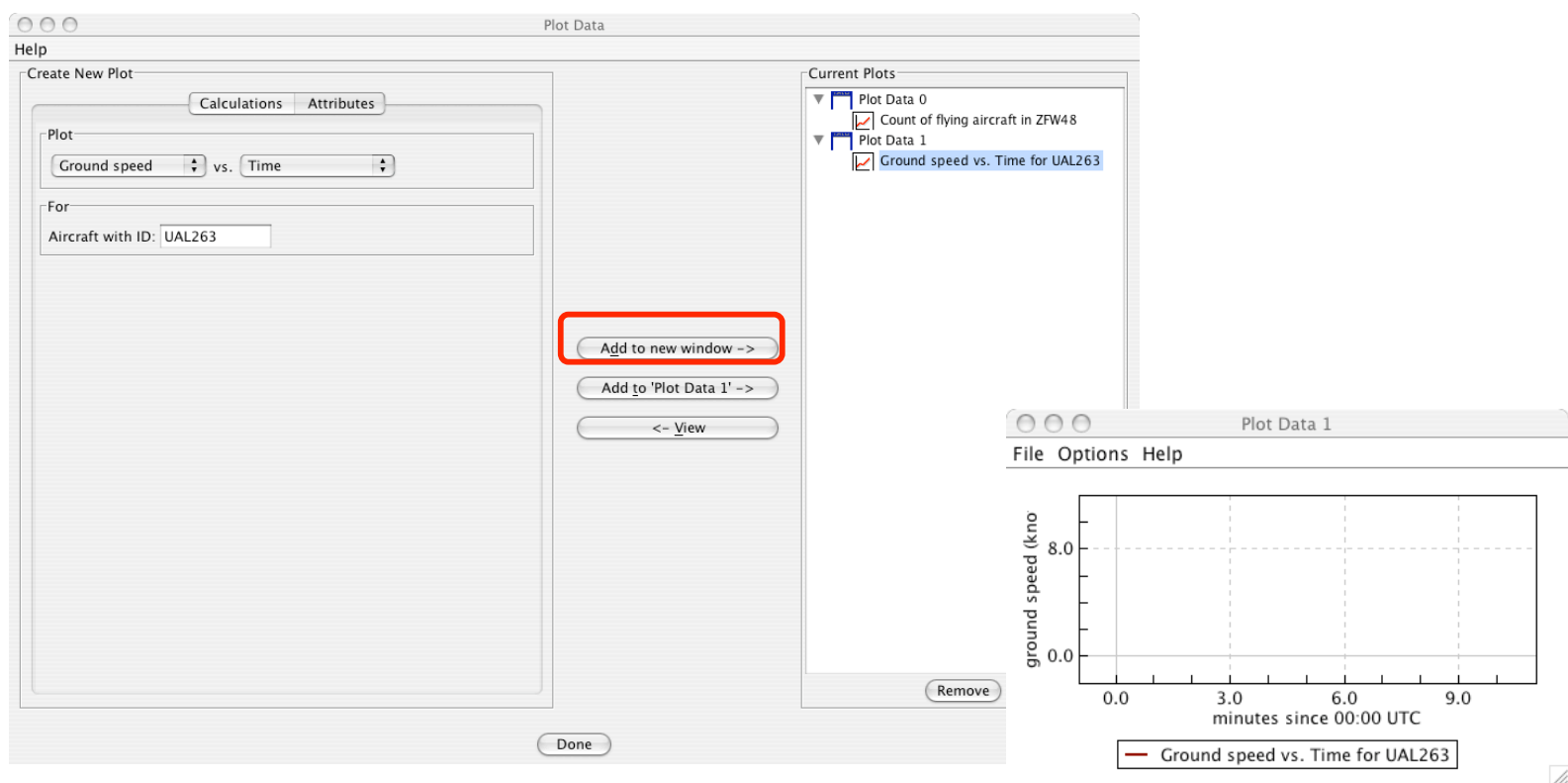
Between the two panels, there are three buttons: "Add to new window ->", "Add to 'Plot Data 0' ->", and "<- View". At the bottom center of the window is a "Done" button.



Playback Mode Setup: Plot Data Setup

STEP 27:

Press the “Add to new window” button to add the current plot to the list of active plots. A new blank plot window will appear.

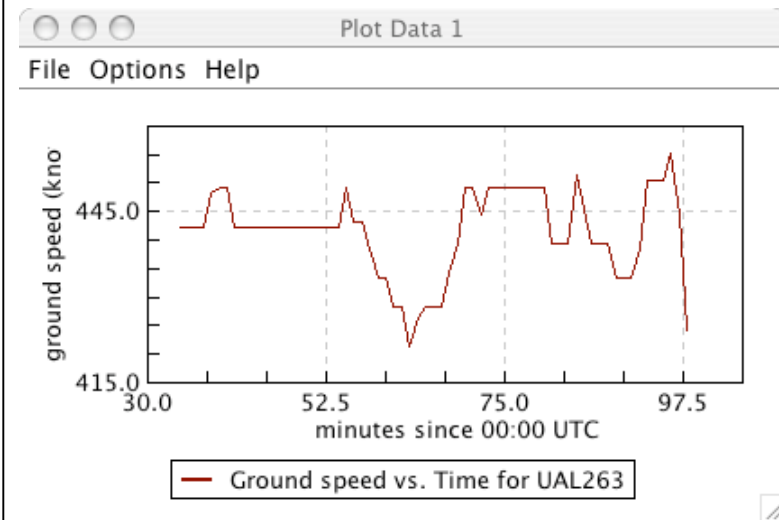




Playback Mode Setup: Plot Data Setup

STEP 28:

The ground speed versus time curve will update automatically as FACET operates in any of its modes.





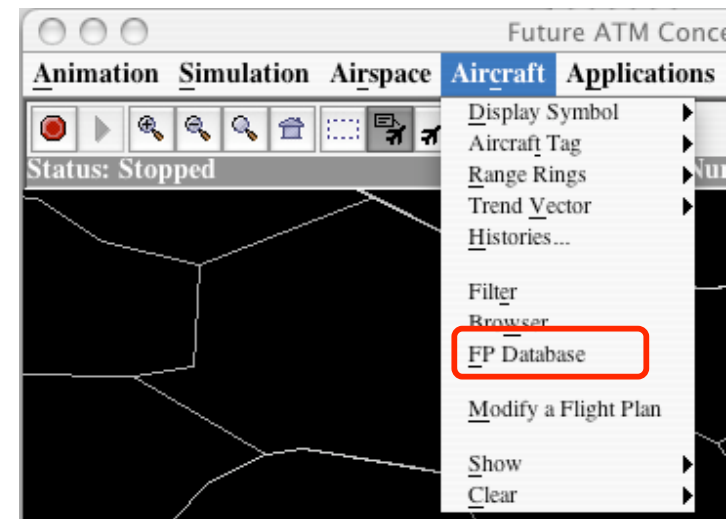
Outline

- **Starting FACET**
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- ⇒ **Flight Plan Database**
- **Sector Count Analysis**
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Flight Plan Database

Step 1:
Choose *FP Database* from the
Aircraft menu





Flight Plan Database

The screenshot shows the Flight Plan Database application interface. It includes a status bar at the top, a query section with input fields and a search button, a table of database entries, and a section for query options and statistics. Annotations with arrows point to specific parts of the interface:

- Database administration:** Points to the top status bar containing buttons like Disconnect, Status, Close, Store to database, Configure..., Configure cleanup..., and Save database to file...
- Database query:** Points to the query section with input fields for AcID, Orig, Dest, Type, Flight plan, and Date/Time Range, along with a Search button.
- Database Entries:** Points to the table displaying database entries.
- Query Update/Display/Save Options:** Points to the section containing checkboxes for columns, auto-refresh, display options, and compute event statistics, along with a Save table to file... button.
- Flight statistics:** Points to the General tab showing a table of statistics (ETA, PDT, Toff, Ton, Altitude) and buttons for View list... and View histogram...

	# hits	Min	Max	Mean	Std. dev
ETA	0 -	-	-	-	-
PDT	0 -	-	-	-	-
Toff	0 -	-	-	-	-
Ton	0 -	-	-	-	-
Altitude	0 -	-	-	-	-



Flight Plan Database

Step 2:

As a sample query, enter “ORD” as the origin and “EWR” and the destination. Press the “Search” button to initiate the database search.

Flight Plan Database

Help

Disconnect Status: Connected to database Close

Store to database Configure... Configure cleanup... Save database to file...

Query

AcID: Orig: **ORD** Dest: **EWR** Type:

Flight plan:

Date/Time Range: MM / DD / YYYY HH : MM : SS UTC to MM / DD / YYYY HH : MM : SS UTC Search

Toffs AcID Flight Plan

Columns: ☒ AcID ☐ FACET ID ☐ Orig ☐ Dest ☐ Type ☒ Flight plan 0 rows

Auto-refresh every 5 minutes Save table to file...

Display selected flight plans Display selected histories

Compute event statistics for selected flights:

General Sector Entries

	# hits	Min	Max	Mean	Std. dev
ETA	0 -	-	-	-	-
PDT	0 -	-	-	-	-
Toff	0 -	-	-	-	-
Ton	0 -	-	-	-	-
Altitude	0 -	-	-	-	-

View list... View histogram...



Flight Plan Database

Step 3:
The database entries
matching the search query
appear in the query list

The screenshot shows the 'Flight Plan Database' application window. At the top, there's a 'Help' button and a 'Status: Connected to database' indicator. Below this are buttons for 'Disconnect', 'Store to database', 'Configure...', 'Configure cleanup...', and 'Save database to file...'. The 'Query' section contains input fields for 'AcID', 'Orig' (set to 'ORD'), 'Dest' (set to 'EWR'), and 'Type'. There's also a 'Flight plan' input field and a 'Search' button. A 'Date/Time Range' section allows filtering by month, day, year, hour, minute, and second in UTC. The search results are displayed in a table with columns: '# Toffs', 'AcID', and 'Flight Plan'. The results list several flight plans, including AAL1184 and AAL1292, all originating from ORD and destined for EWR. A red rectangle highlights the search results table. Below the table, there are checkboxes for 'Auto-refresh every 5 minutes', 'Display selected flight plans', and 'Display selected histories'. At the bottom, there's a 'General' tab and a 'Sector Entries' tab. The 'General' tab shows a table with columns: '# hits', 'Min', 'Max', 'Mean', and 'Std. dev'. The rows include 'ETA', 'PDT', 'Toff', 'Ton', and 'Altitude', all showing '0' for hits. There are 'View list...' and 'View histogram...' buttons next to the table.

# Toffs	AcID	Flight Plan
0	AAL1184	ORD./GJ067028.SLT.FQM1.EWR
0	AAL1184	ORD./GJ072038.SLT.FQM1.EWR
0	AAL1184	ORD./JOT053048.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./JOT053048.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./JOT056032.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./SLT.FQM.FQM1.EWR
0	AAL1292	ORD./GJ349021.CRLJ584.SLT.FQM1.EWR
0	AAL1292	ORD./GJ349021.CRLJ584.SLT.FQM1.EWR
0	AAL1292	ORD./GJ352021.CRLJ584.SLT.FQM1.EWR

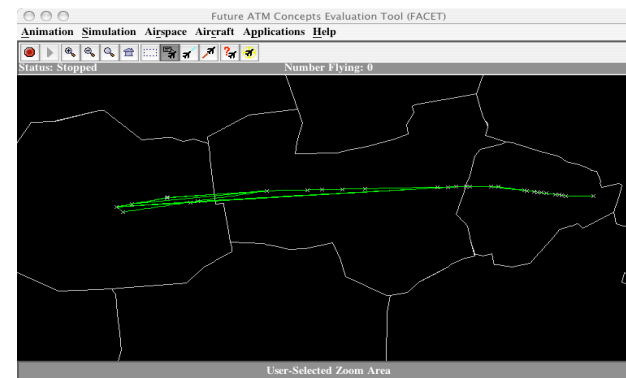
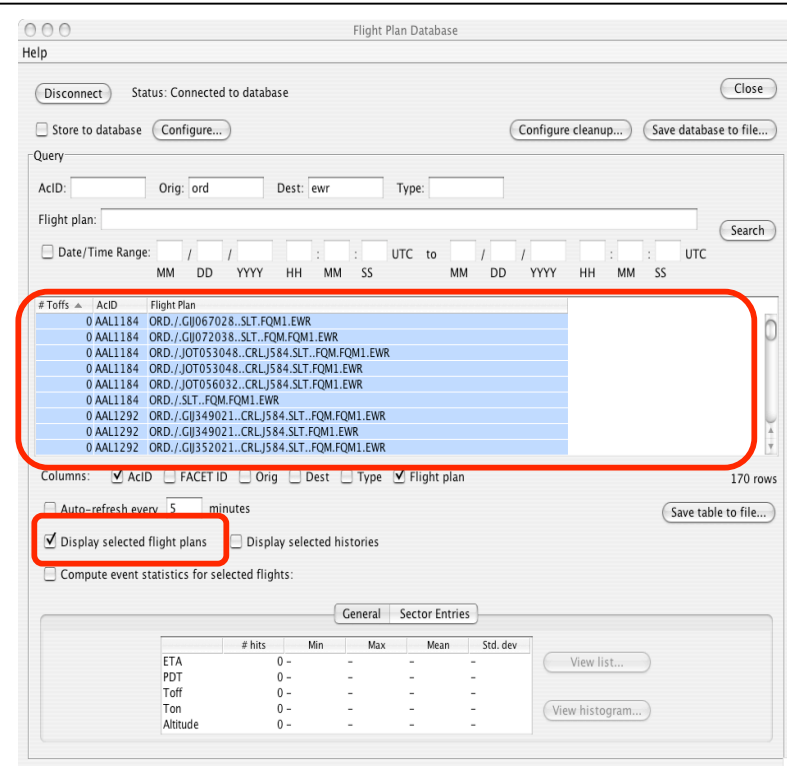
	# hits	Min	Max	Mean	Std. dev
ETA	0	-	-	-	-
PDT	0	-	-	-	-
Toff	0	-	-	-	-
Ton	0	-	-	-	-
Altitude	0	-	-	-	-



Flight Plan Database

Step 4:

Queried entries can be displayed by (1) selecting the entries and (2) select the “Display selected flight plans” checkbox





Flight Plan Database

Step 5:

Event statistics can be generated by (1) selecting the entries and (2) select the “Compute event statistics for selected flights” checkbox

Flight Plan Database

Help

Disconnect Status: Connected to database Close

☐ Store to database Configure... Configure cleanup... Save database to file...

Query

AcID: Orig: ord Dest: ewr Type: Search

Flight plan: Search

☐ Date/Time Range: MM DD YYYY HH MM SS UTC to MM DD YYYY HH MM SS UTC

# Toffs	AcID	Flight Plan
0	AAL1184	ORD./GJI067028.SLT.FQM1.EWR
0	AAL1184	ORD./GJI072038.SLT.FQM1.EWR
0	AAL1184	ORD./JOT053048.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./JOT053048.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./JOT056032.CRLJ584.SLT.FQM1.EWR
0	AAL1184	ORD./SLT.FQM.FQM1.EWR
0	AAL1292	ORD./GJI349021.CRLJ584.SLT.FQM1.EWR
0	AAL1292	ORD./GJI349021.CRLJ584.SLT.FQM1.EWR
0	AAL1292	ORD./GJI352021.CRLJ584.SLT.FQM1.EWR

Columns: ☒ AcID ☐ FACET ID ☐ Orig ☐ Dest ☐ Type ☒ Flight plan 170 rows

☐ Auto-refresh every 5 minutes Save table to file...

☐ Display selected flight plans ☐ Display selected histories

☒ Compute event statistics for selected flights:

General Sector Entries

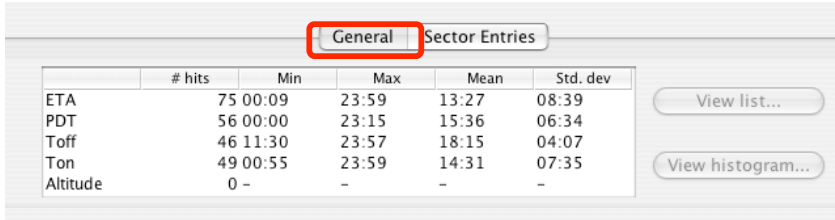
	# hits	Min	Max	Mean	Std. dev
ETA	75	00:09	23:59	13:27	08:39
PDT	56	00:00	23:15	15:36	06:34
Toff	46	11:30	23:57	18:15	04:07
Ton	49	00:55	23:59	14:31	07:35
Altitude	0	-	-	-	-

View list... View histogram...



Flight Plan Database

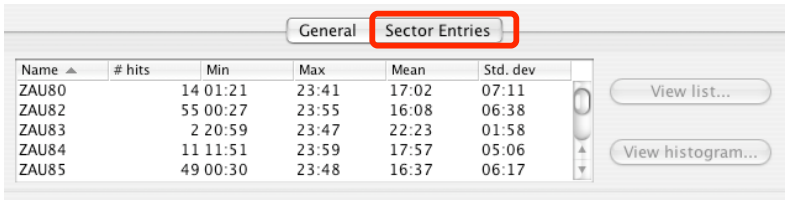
Step 6:
General event statistics (ETA, PDT, etc.) for the selected entries are available on the “General” tab.



	# hits	Min	Max	Mean	Std. dev
ETA	75	00:09	23:59	13:27	08:39
PDT	56	00:00	23:15	15:36	06:34
Toff	46	11:30	23:57	18:15	04:07
Ton	49	00:55	23:59	14:31	07:35
Altitude	0	-	-	-	-

View list... View histogram...

Step 7:
Sector entry times for the selected entries are available on the “Sector Entries” tab.



Name ▲	# hits	Min	Max	Mean	Std. dev
ZAU80	14	01:21	23:41	17:02	07:11
ZAU82	55	00:27	23:55	16:08	06:38
ZAU83	2	20:59	23:47	22:23	01:58
ZAU84	11	11:51	23:59	17:57	05:06
ZAU85	49	00:30	23:48	16:37	06:17

View list... View histogram...



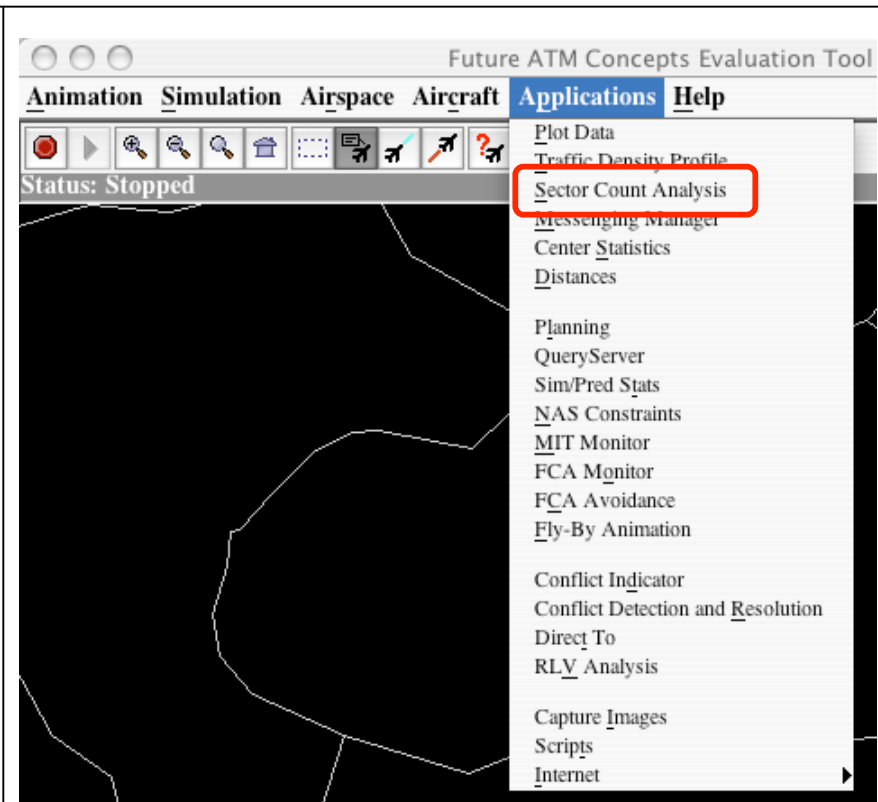
Outline

- **Starting FACET**
- **Playback Mode Setup**
 - Pause/Resume/Stop
 - Filter Setup
 - Plot Data Setup
- **Flight Plan Database**
- ⇒ **Sector Count Analysis**
- **Planning**



Sector Count Analysis

Step 1:
Choose *Sector Count Analysis*
from the **Applications** menu





Sector Count Analysis

The screenshot shows the 'Sector Count Analysis' window. At the top, the 'Database Status' section contains a 'Disconnect' button and the text 'Connected To Database', highlighted by a red box. Below this are three tabs: 'Analysis', 'Query', and 'Admin', highlighted by a green box. The 'Analysis' tab is active, showing a 'Data Type' dropdown set to 'Actual'. Under 'Input Parameters', there is a 'Sector' dropdown set to 'None' with a 'Choose...' button, and three radio buttons for 'Low', 'High' (selected), and 'Super'. Below these are several optional filters: 'Day Of Week' (Sunday), 'Month' (January), 'Date' (1), 'Year' (2004), and 'Time' (00:00:00 to 24:00:00), all highlighted by a blue box. At the bottom, the 'Results' section displays 'Average:', 'Standard Deviation:', 'Minimum:', and 'Maximum:' labels, highlighted by a purple box. At the very bottom are 'Compute' and 'Close' buttons.

Database connectivity button

Analysis/Query/Admin Tabs

Sector count query setup

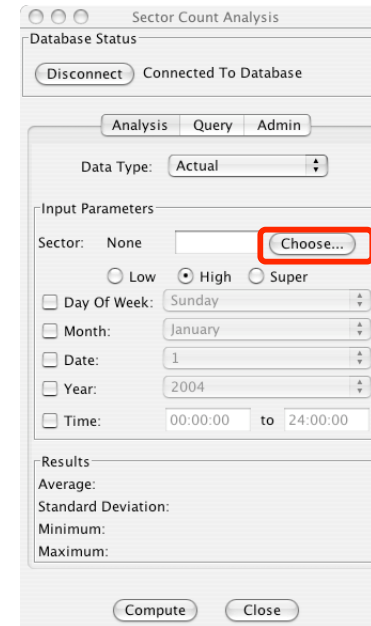
Sector count query results



Sector Count Analysis

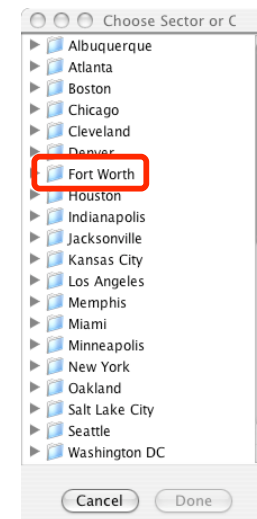
Step 2:

To query the sector count database, press the “Choose” button and select the sector(s) of interest.



Step 3:

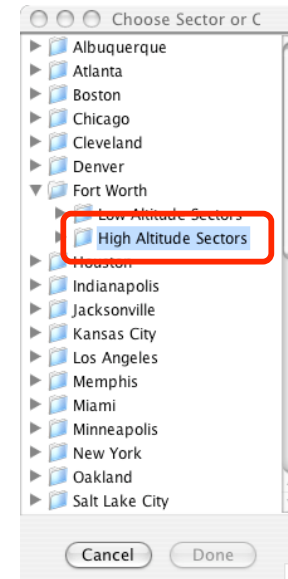
Open the “Fort Worth” folder, as an example.



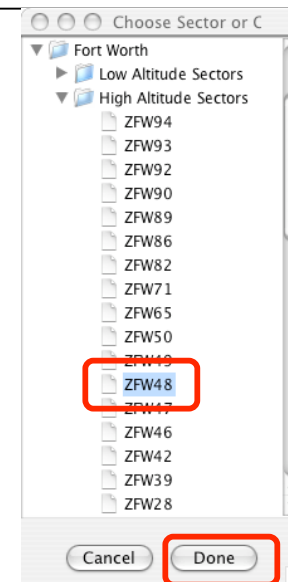


Sector Count Analysis

Step 4:
Open the “High Altitude
Sectors” folder.



Step 5:
Select “ZFW48”, for
example, then press the
“Done” button.





Sector Count Analysis

Step 6:

Set the date/time filter then press the “Compute” button. As an example, select the “Time” checkbox and use the default time setting range.

Sector Count Analysis

Database Status
 Connected To Database

Analysis Query Admin

Data Type: Actual

Input Parameters

Sector: ZFW48

☐ Low ☒ High ☐ Super

☐ Day Of Week: Sunday

☐ Month: January

☐ Date: 1

☐ Year: 2004

☒ Time: 00:00:00 to 24:00:00

Results

Average:

Standard Deviation:

Minimum:

Maximum:

Sector count statistics are displayed in the “Results” section.

Sector Count Analysis

Database Status
 Connected To Database

Analysis Query Admin

Data Type: Actual

Input Parameters

Sector: ZFW48

☐ Low ☒ High ☐ Super

☐ Day Of Week: Sunday

☐ Month: January

☐ Date: 1

☐ Year: 2004

☒ Time: 00:00:00 to 24:00:00

Results

Average:	5.0215
Standard Deviation:	4.0589445742386
Minimum:	0.0
Maximum:	18.0



Outline

- **Starting FACET**
- **Playback Mode Setup**
- **Flight Plan Database**
- **Sector Count Analysis**

⇒ **Planning**

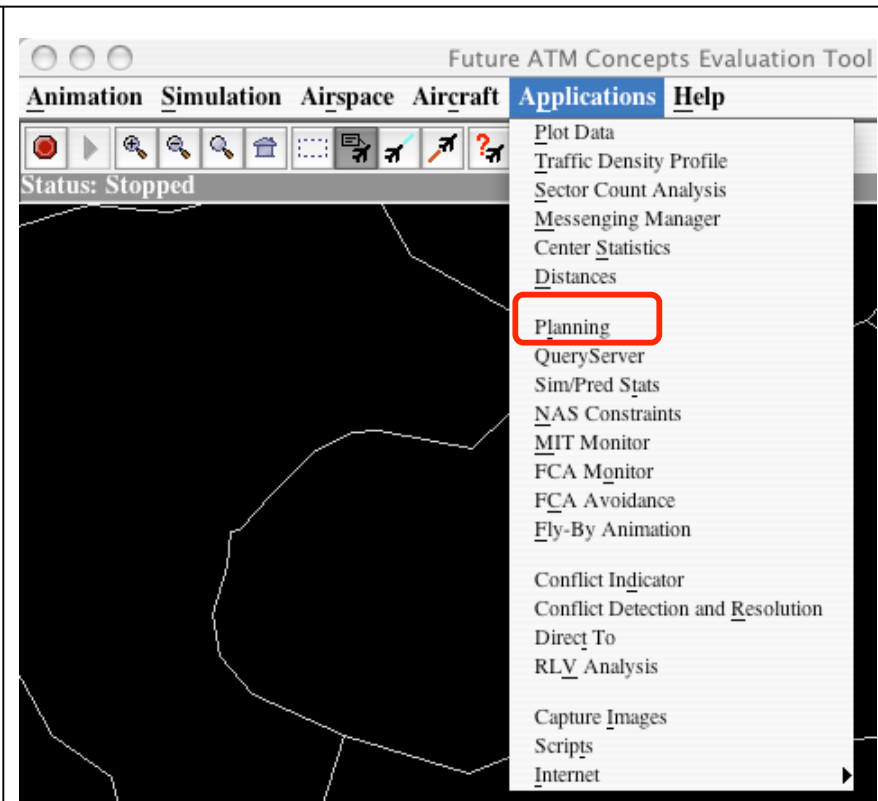
⇒ **Setup/Usage**

– **Rerouting**



Planning: Setup/Usage

Step 1:
Choose *Planning* from the
Applications menu





Planning: Setup/Usage

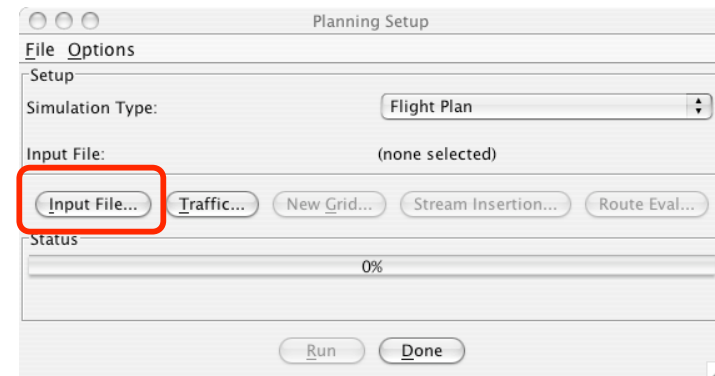
The screenshot shows the 'Planning Setup' dialog box with the following components and annotations:

- Simulation Type:** A dropdown menu currently set to 'Flight Plan'. A red arrow points to it with the text: "Select simulation type: flight plan or great circle".
- Input File:** A text field containing '(none selected)'. A green arrow points to it with the text: "Input file name - not present in live mode".
- Buttons:** A row of five buttons: 'Input File...', 'Traffic...', 'New Grid...', 'Stream Insertion...', and 'Route Eval...'. A blue arrow points to this row with the text: "Planning setup parameters".
- Status:** A progress bar showing '0%'. A purple arrow points to it with the text: "Planning status bar".
- Run/Done Buttons:** Two buttons at the bottom: 'Run' and 'Done'.

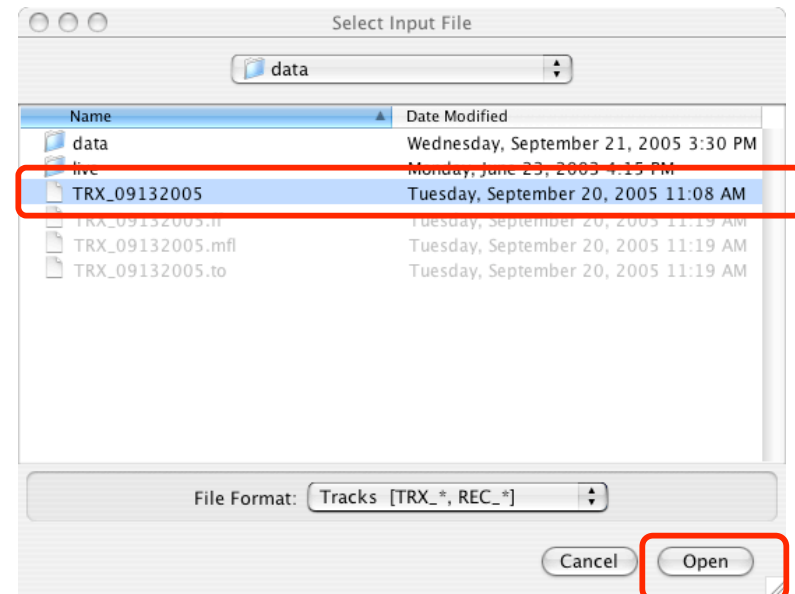


Planning: Setup/Usage

Step 2:
Select the “Input File” button



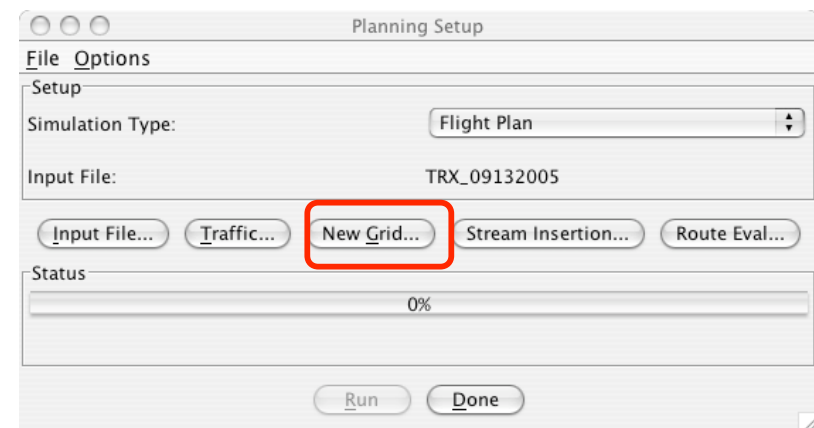
Step 3:
Select the input file
containing the initial aircraft
positions and flight plans
then press the “Open” button





Planning: Setup/Usage

Step 4:
Select the “New Grid” button





Planning: Setup/Usage

Type of prediction

List of selected sectors

Available sector list

Prediction interval

Sector count type

Sector count reporting method

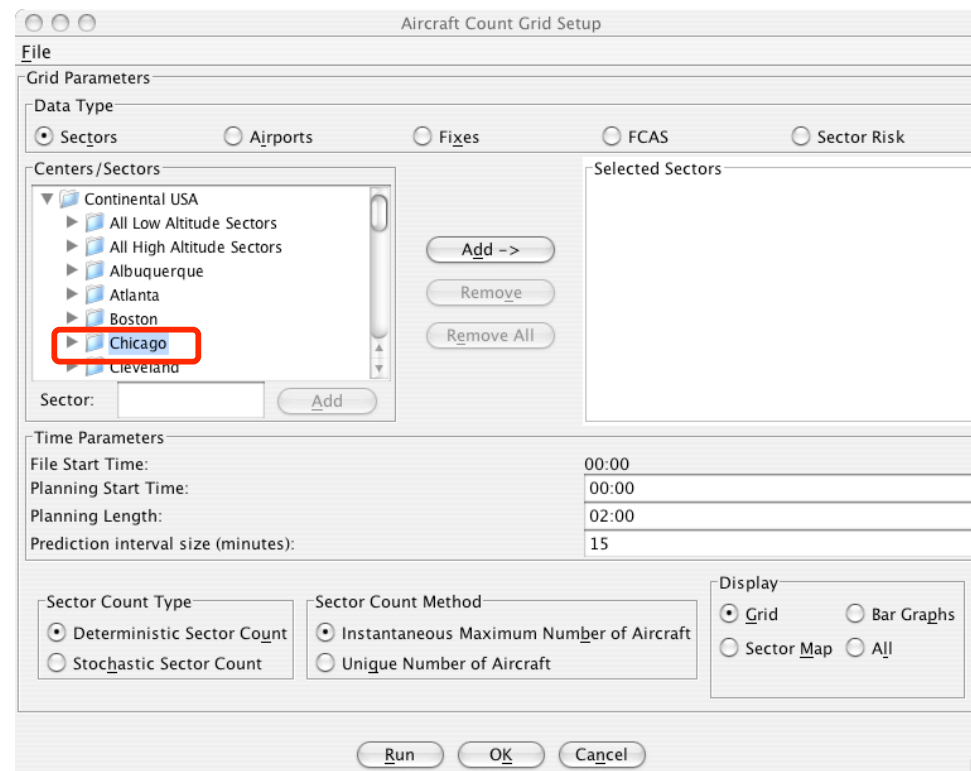
Default display type

The screenshot shows the 'Aircraft Count Grid Setup' dialog box. It is divided into several sections: 'Grid Parameters' at the top, 'Centers/Sectors' in the middle-left, 'Time Parameters' in the middle-right, 'Sector Count Type' at the bottom-left, 'Sector Count Method' at the bottom-middle, and 'Display' at the bottom-right. The 'Grid Parameters' section has radio buttons for 'Data Type': 'Sectors' (selected), 'Airports', 'Fixes', 'FCAS', and 'Sector Risk'. The 'Centers/Sectors' section has a list box containing a tree view of locations: 'Continental USA' (expanded), 'All Low Altitude Sectors', 'All High Altitude Sectors', 'Albuquerque', 'Atlanta', 'Boston', 'Chicago', and 'Cleveland'. There are 'Add ->', 'Remove', and 'Remove All' buttons next to the list. Below the list is a 'Sector:' text field and an 'Add' button. The 'Time Parameters' section has fields for 'File Start Time', 'Planning Start Time', 'Planning Length', and 'Prediction interval size (minutes)'. The 'Sector Count Type' section has radio buttons for 'Deterministic Sector Count' (selected) and 'Stochastic Sector Count'. The 'Sector Count Method' section has radio buttons for 'Instantaneous Maximum Number of Aircraft' (selected) and 'Unique Number of Aircraft'. The 'Display' section has radio buttons for 'Grid' (selected), 'Bar Graphs', 'Sector Map', and 'All'. At the bottom are 'Run', 'OK', and 'Cancel' buttons. Annotations with arrows point to various parts of the dialog: 'Type of prediction' points to the 'Data Type' radio buttons; 'List of selected sectors' points to the 'Selected Sectors' list box; 'Available sector list' points to the 'Centers/Sectors' list box; 'Prediction interval' points to the 'Prediction interval size (minutes)' field; 'Sector count type' points to the 'Sector Count Type' radio buttons; 'Sector count reporting method' points to the 'Sector Count Method' radio buttons; and 'Default display type' points to the 'Display' radio buttons.



Planning: Setup/Usage

Step 5:
Select and open the “Chicago” folder

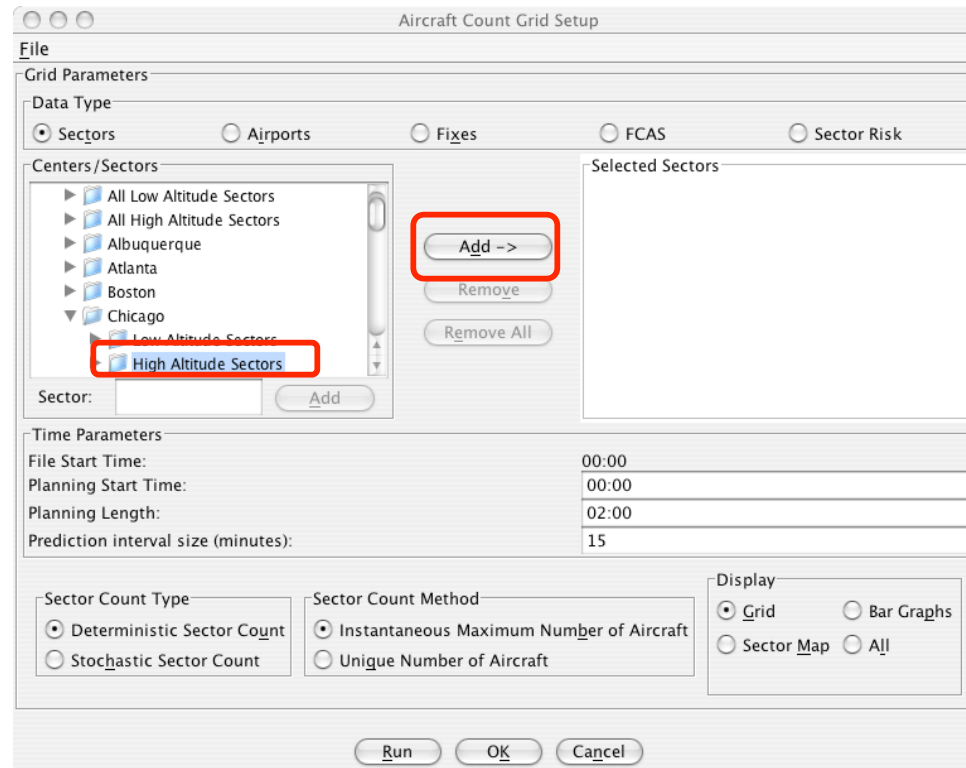




Planning: Setup/Usage

Step 6:

Select the “High Altitude Sectors” folder and press the “Add” button.

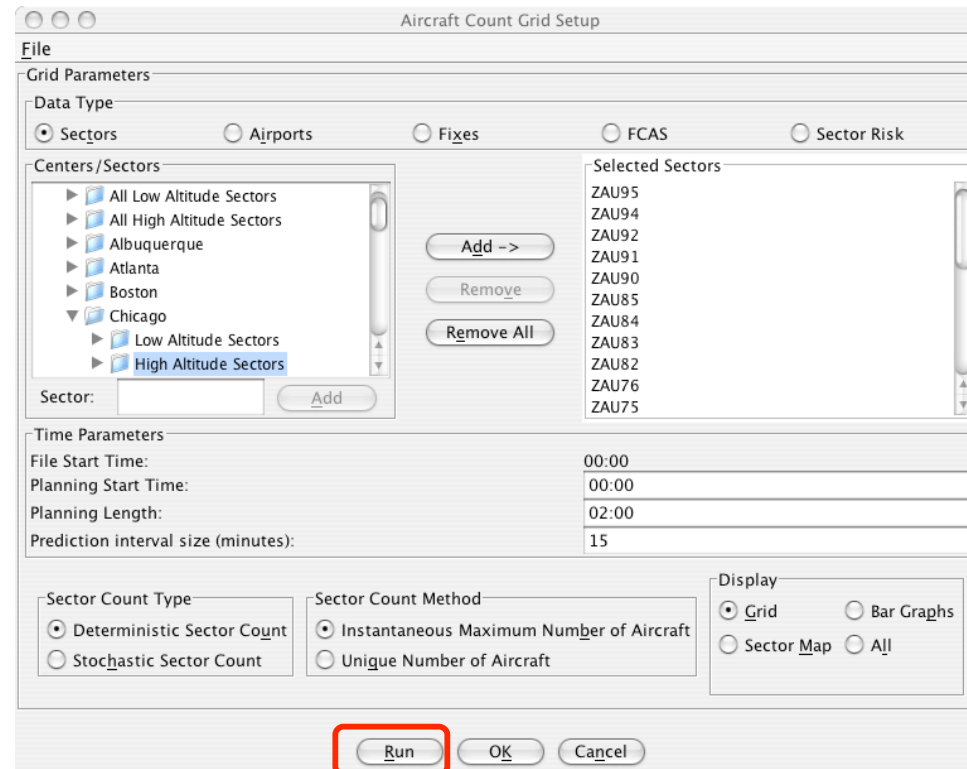




Planning: Setup/Usage

Step 7:

Press the “Run” button to initiate the calculations

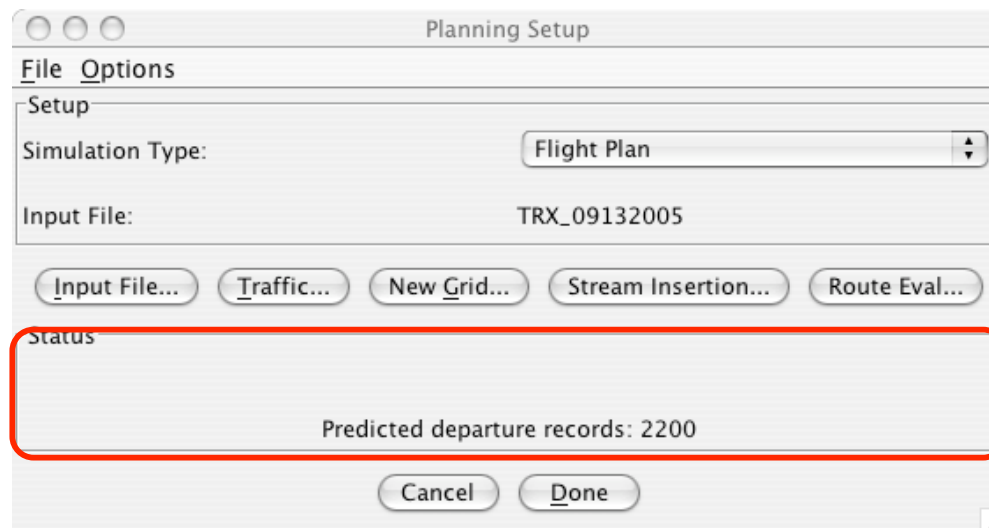




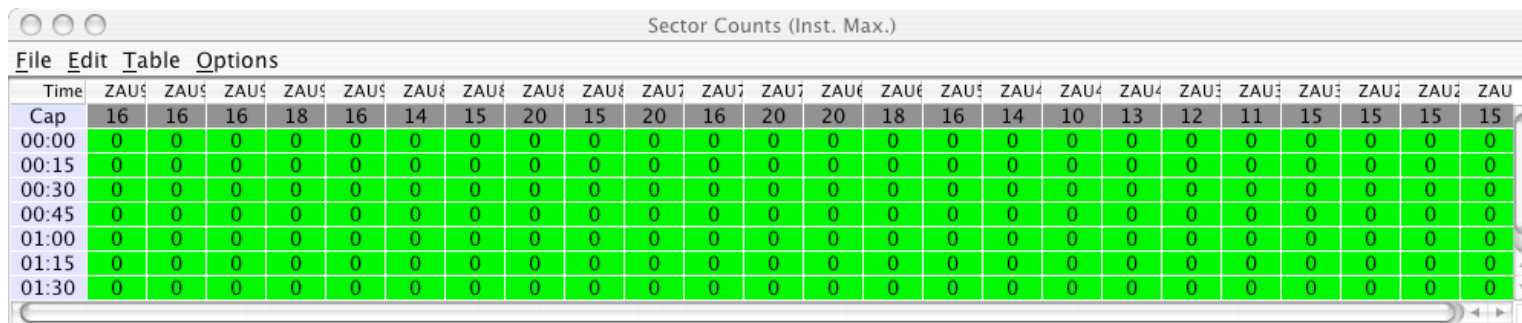
Planning: Setup/Usage

Step 8:

A “blank” sector count grid will appear and the prediction status bar will begin updating.



The Planning Setup dialog box is shown. It has a title bar with three window control buttons. The menu bar includes 'File' and 'Options'. The 'Setup' tab is selected. The 'Simulation Type' is set to 'Flight Plan' in a dropdown menu. The 'Input File' is 'TRX_09132005'. Below these are five buttons: 'Input File...', 'Traffic...', 'New Grid...', 'Stream Insertion...', and 'Route Eval...'. A red rectangle highlights the 'Status' section, which contains the text 'Predicted departure records: 2200'. At the bottom are 'Cancel' and 'Done' buttons.

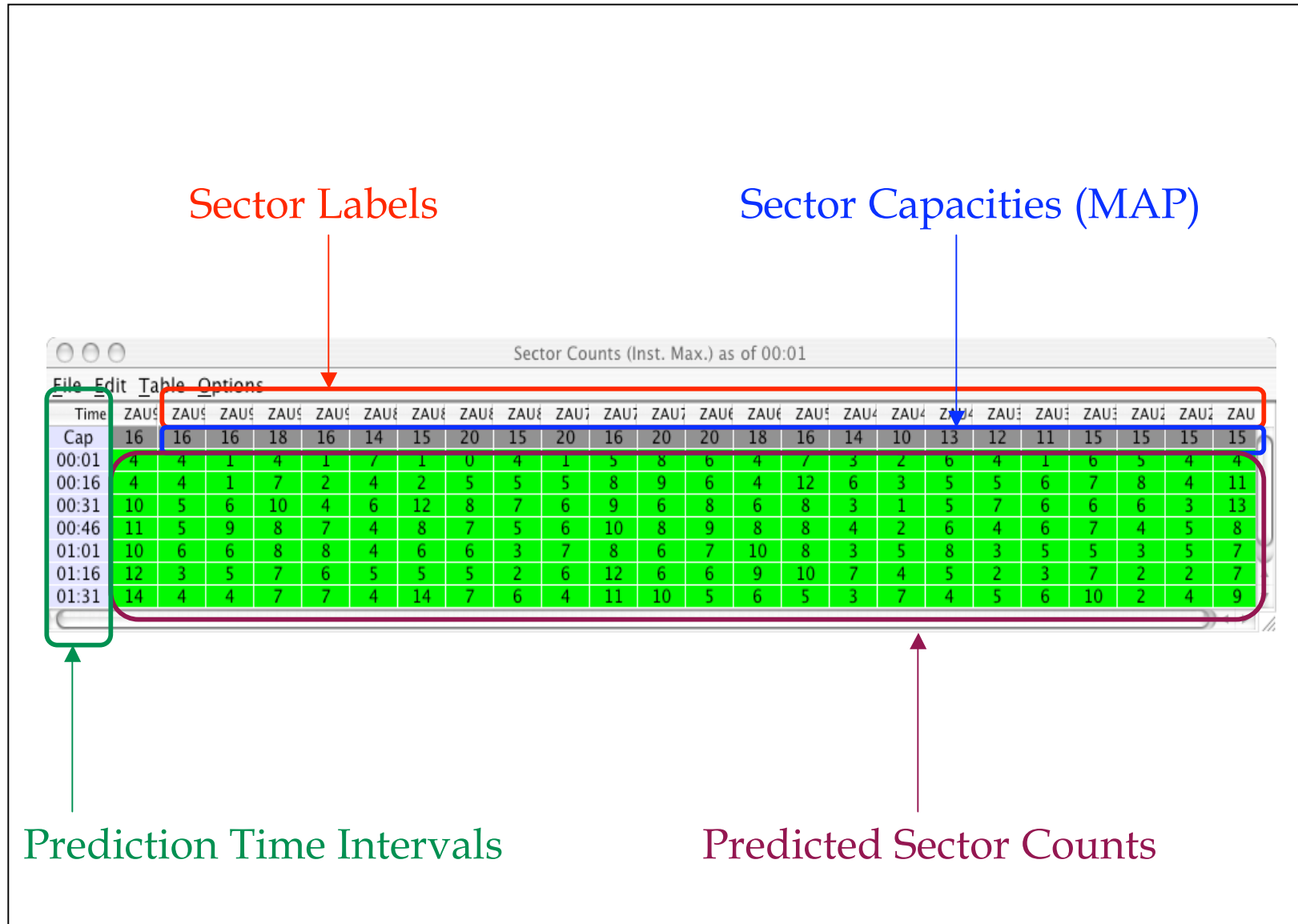


The Sector Counts (Inst. Max.) window displays a table of sector counts. The table has 24 columns representing different sectors and 7 rows representing time intervals. The 'Cap' row shows the maximum capacity for each sector. All data cells are green and contain the value '0'.

Time	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS
Cap	16	16	16	18	16	14	15	20	15	20	16	20	20	18	16	14	10	13	12	11	15	15	15
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Planning: Setup/Usage





Planning: Setup/Usage

Step 9:

Selecting any grid cell results in a list of flights predicted to use the selected sector during the selected time period.

Time	ZAUS	ZAUS	ZAUS	ZAUS
Cap	16	16	16	18
00:01	4	4	1	4
00:16	4	4	1	7
00:31	10	5	6	10
00:46	11	5	9	8
01:01	10	6	6	8
01:16	12	3	5	7
01:31	14	4	4	7

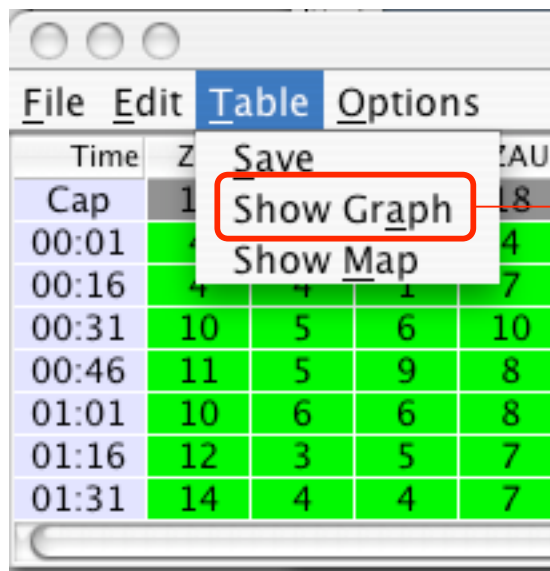
ZAU95 [00:43]									
File Flight plans									
ID (10)	Tin	TOu	FLI	FLO	Stat	Show f	Flight Plan		
COA1861	00:39	01:08	360	360	P/P	<input type="checkbox"/>	EWR./SEG240014..IOW.J10.OBH..BFF.J94.OCS.LHO3.SLC/0326		
EGF461	00:40	00:57	363	380	P/P	<input type="checkbox"/>	ORD./VORIN285040..GLD..COS/0222		
FFT548	00:34	00:51	363	380	P/P	<input type="checkbox"/>	MDW./VORIN304031..LBF.SAYGE5.DEN/0209		
HPJ117	00:43	00:52	380	380	P/P	<input type="checkbox"/>	BOS./IOW307025..HEC..BUR/0412		
NWA393	00:31	00:50	360	360	P/P	<input type="checkbox"/>	DTW./DUNKS.J70.PMM.J547.OBK..IOW..STJ.J18.SLN..LBL.J19.BI		
NWA459	00:38	00:44	360	360	P/P	<input type="checkbox"/>	MEM./VIH068042..ALO.KASPR3.MSP/0104		
SWA1685	00:30	00:57	390	390	P/P	<input type="checkbox"/>	LAS./GLD054019..IOW..OBK.J584.CRL.J554.JHW.J82.ALB..ALB		
SWA709	00:42	00:44	372	360	P/P	<input type="checkbox"/>	MDW./VORIN267060..DVC.GRNPA1.LAS/0342		
UAL8129	00:30	00:43	360	360	P/P	<input type="checkbox"/>	ORD./VORIN280095..LNK.J60.HCT..GLL..EKR.J84.DTA.J148.O/		
UAL905	00:37	00:54	380	380	P/P	<input type="checkbox"/>	JFK./VORIN258054..OCS.J154.J158.MVA.MOD2.SFO/0419		



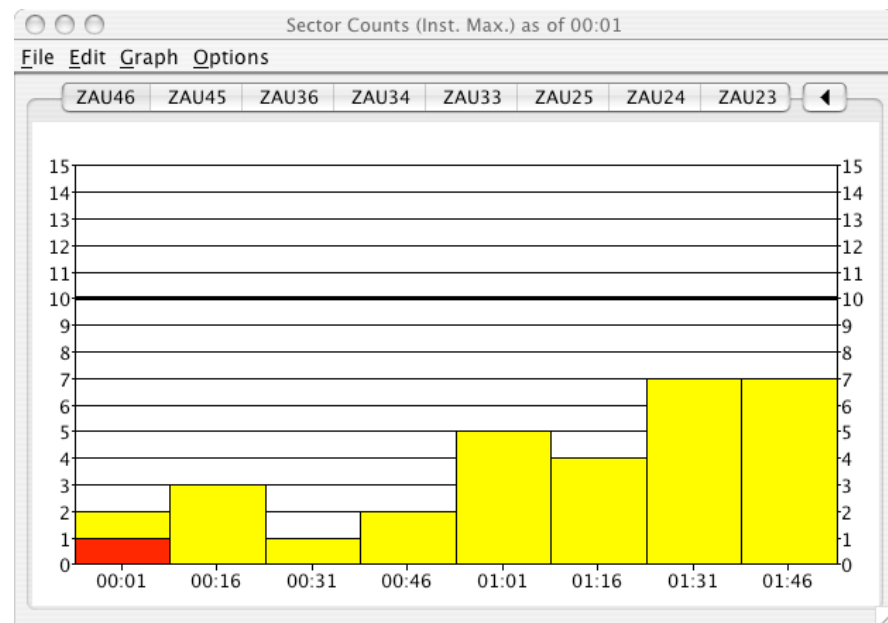
Planning: Setup/Usage

Step 10:

Selecting “Show Graph” from the *Table* menu results in a bar graph display of the sector predictions



Time	Z	SAU	SAU	SAU
Cap	1	8	4	7
00:01	10	5	6	10
00:16	11	5	9	8
00:31	10	6	6	8
00:46	12	3	5	7
01:01	14	4	4	7

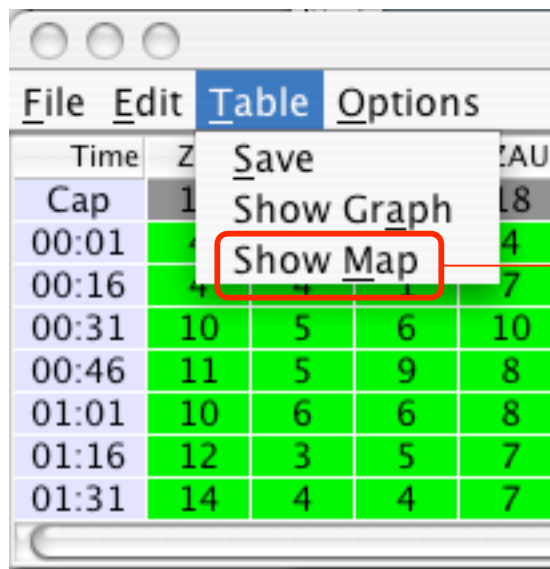




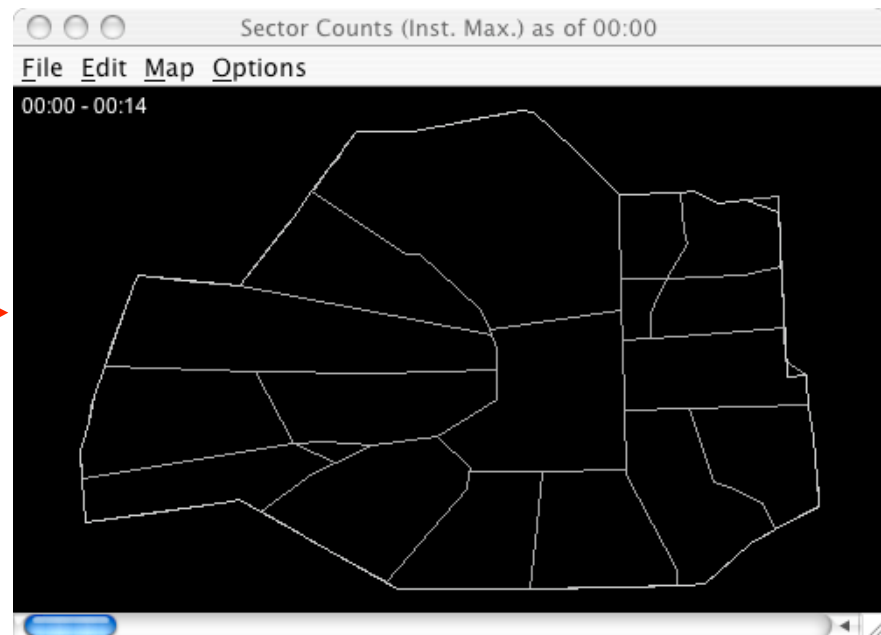
Planning: Setup/Usage

Step 11:

Selecting “Show Map” from the *Table* menu results in a geographical display of the sector demand-capacity imbalances.



Time	Z	Save	CAU	
Cap	1	Show Graph	18	
00:01	4	Show Map	4	
00:16	4		7	
00:31	10	5	6	10
00:46	11	5	9	8
01:01	10	6	6	8
01:16	12	3	5	7
01:31	14	4	4	7

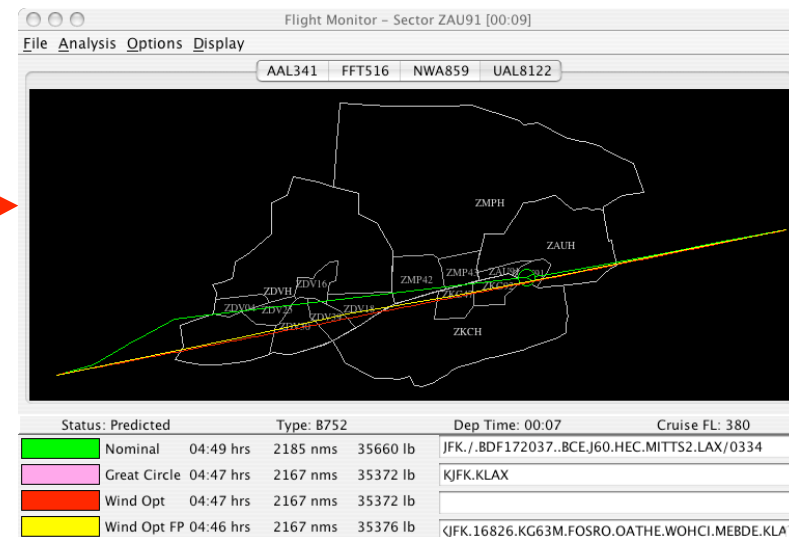
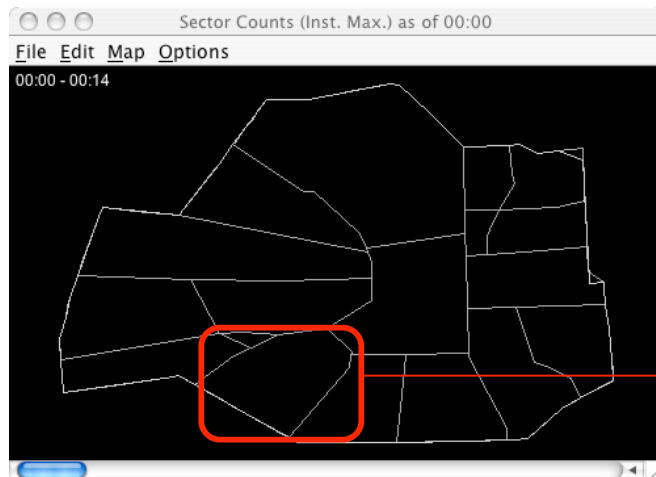




Planning: Setup/Usage

Step 12:

Selecting any of the sectors will result in a graphical display of the aircraft predicted to enter the selected sector





Outline

- **Starting FACET**
- **Playback Mode Setup**
- **Flight Plan Database**
- **Sector Count Analysis**

⇒ **Planning**

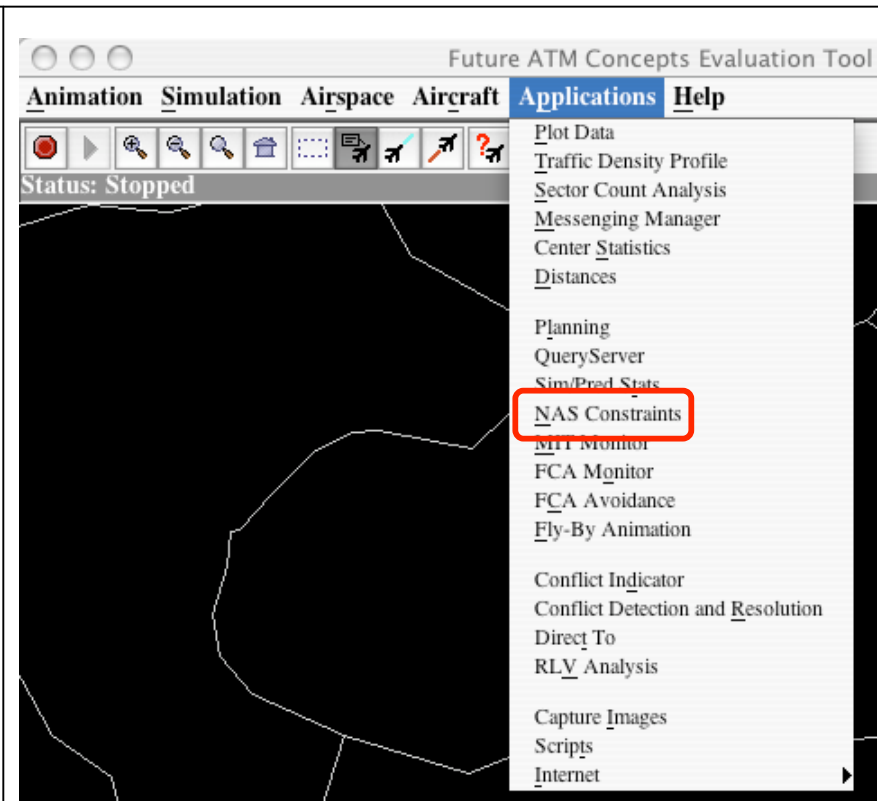
–Setup/Usage

⇒ **Rerouting**



Planning: Rerouting

Step 13:
Choose *NAS Constraints*
from the **Applications** menu





Planning: Rerouting

The screenshot shows the 'NAS Constraint Setup' window. The 'Playbook Setup' tab is selected and highlighted with a red box. Below the tabs, a list of playbooks is shown, including 'National Playbook', 'East to West Transcon Routes', 'Airports', 'In Use', 'Airway Closures', 'South to Northeast Routes', and 'West to East Transcon Routes'. This list is enclosed in a green box. Below the list, there are two time input fields: 'Start Time (HHMM): 00:00' and 'Stop Time (HHMM): 23:59', enclosed in a blue box. Below the time fields, there is a section titled 'Implemented Plans' which is currently empty, enclosed in a purple box. At the bottom of the window, there are several control buttons: 'Display Graphics', 'Cancel Display', 'Clear All', 'Display Text', 'Implement', 'Cancel', and 'Close'. These buttons are enclosed in an orange box. Arrows point from the text labels on the right to the corresponding elements in the window.

Restriction Selection Tabs

Playbook Selection Area

Reroute Implementation Time

List of Implemented Reroutes

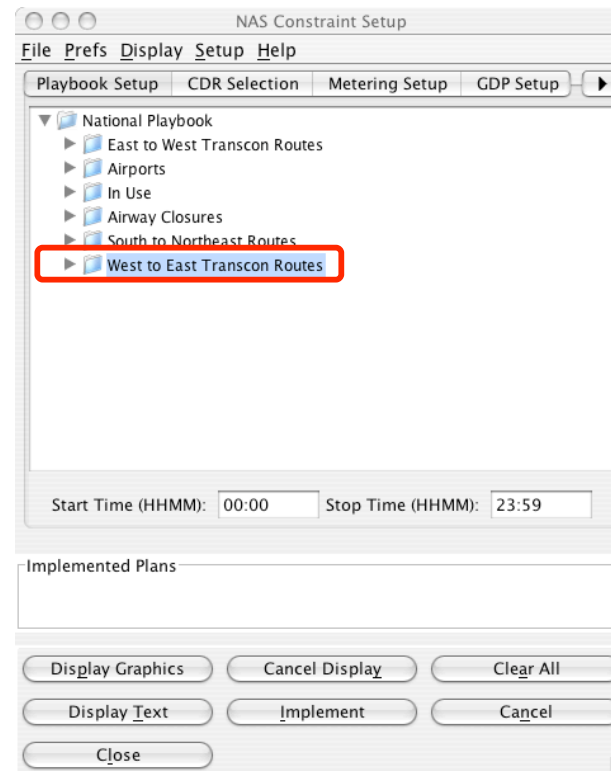
Controls for displaying and implementing a reroute



Planning: Rerouting

Step 14:

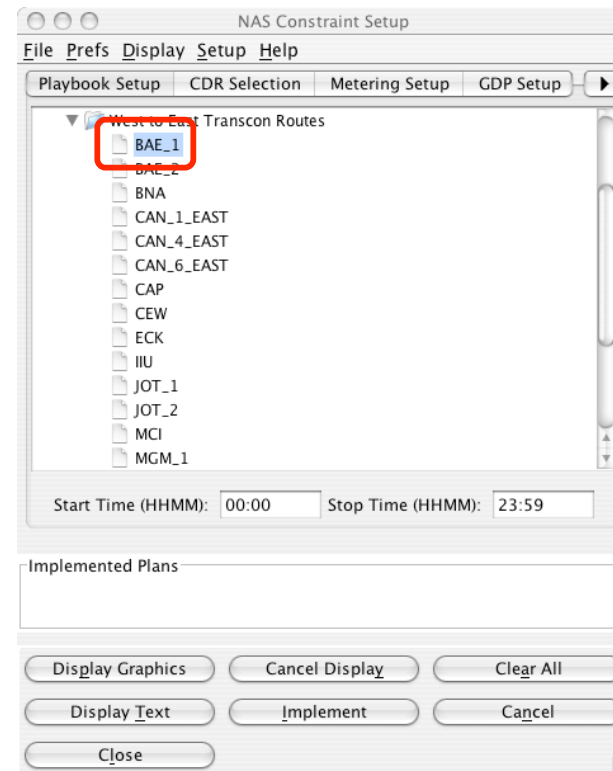
Select and open the “West to East Transcon Routes” folder





Planning: Rerouting

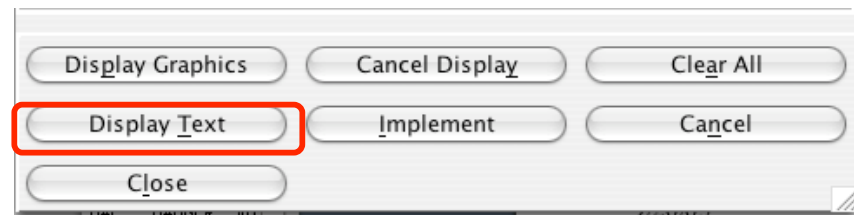
Step 15:
Select the Badger 1 reroute
(i.e. BAE_1)





Planning: Rerouting

Step 16:
Press the “Display Text”
button to see a textural
description of this play.



BAE_1

File

Current URL: file:/Users/shon/LinuxStuff/facet/init/playbook/BAE_1.html

BAE 1

Impacted Flow: USABLE FOR ZOB/ZBW/ZNY/ZDC LANDING TRAFFIC

Facilities Included: ZBW/CZY/ZMP/ZOB/ZLC/ZDV/ZSE/ZOA/ZLA

Instructions: REROUTE ANY AIRBORNE TRAFFIC AND INTERNAL DEPARTURES VIA THE DESIGNATED ROUTE THEN JOIN THE PREF ROUTING TO DESTINATION:

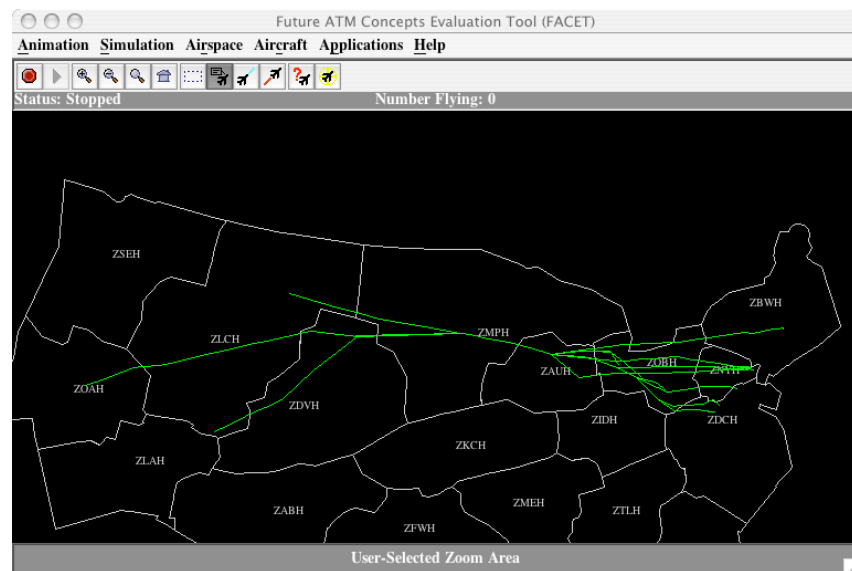
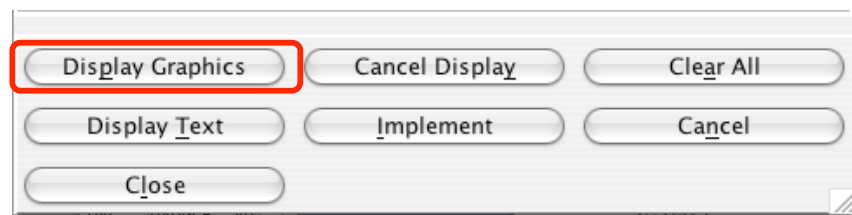
FACILITY	ROUTING
ZMP	ODI J34 BAE
ZSE	BIL J34 BAE



Planning: Rerouting

Step 17:

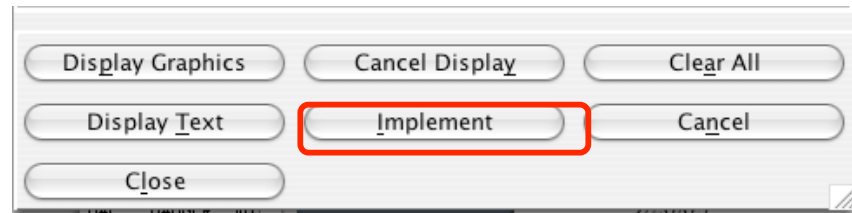
Press the “Display Graphics” button to display the reroute on the FACET display.



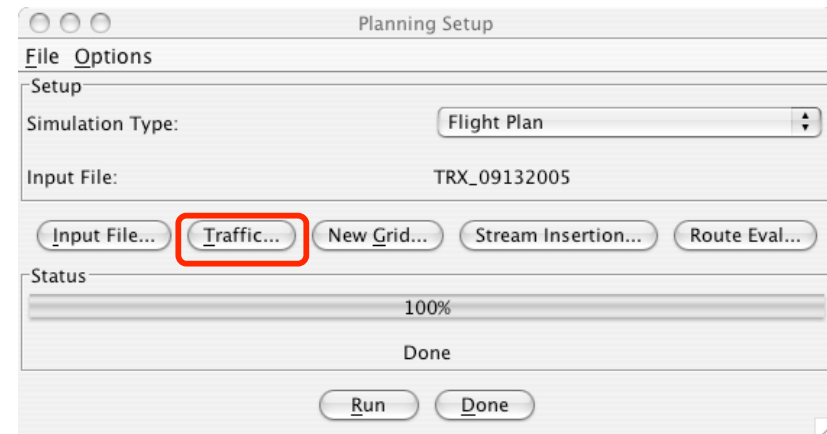


Planning: Rerouting

Step 18:
Press the “Implement”
button to implement the
BAE_1 reroute.



Step 19:
Press the “Traffic” button to
set the sector count
difference settings.



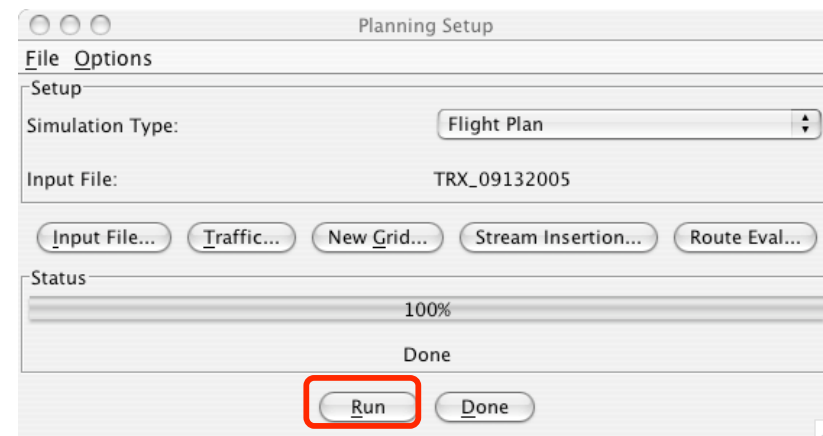


Planning: Rerouting

Step 20:
Set the traffic
increase/decrease value to 1
and press the “OK” button.



Step 21:
Press the “Run” button to
rerun the calculations with
the implemented playbook
reroute.





Planning: Rerouting

Step 22:

The nominal and reroute impacted sector count grids can now be compared. Blue highlighting indicates a decrease in the sector counts and magenta highlighting indicates an increase in the sector counts.

Sector Counts (Inst. Max.) as of 00:01

File

Edit

Table

Options

Time	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	
Cap	16	16	16	18	16	14	15	20	15	20	16	20	20	18	16	14	10	13	12	11	15	15	15	15
00:01	4	4	1	4	1	7	1	0	4	1	5	8	6	4	7	3	2	6	4	1	6	5	4	4
00:16	4	4	1	7	2	4	2	5	5	5	8	9	6	4	12	6	3	5	5	6	7	8	4	11
00:31	10	5	6	10	4	6	12	8	7	6	9	6	8	6	8	3	1	5	7	6	6	6	3	13
00:46	11	5	9	8	7	4	8	7	5	6	10	8	9	8	8	4	2	6	4	6	7	4	5	8
01:01	10	6	6	8	8	4	6	6	3	7	8	6	7	10	8	3	5	8	3	5	5	3	5	7
01:16	12	3	5	7	6	5	5	5	2	6	12	6	6	9	10	7	4	5	2	3	7	2	2	7
01:31	14	4	4	7	7	4	14	7	6	4	11	10	5	6	5	3	7	4	5	6	10	2	4	9

Sector Counts (Inst. Max.) as of 00:01

File

Edit

Table

Options

Time	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	ZAUS	
Cap	16	16	16	18	16	14	15	20	15	20	16	20	20	18	16	14	10	13	12	11	15	15	15	15
00:01	4	4	1	3	1	7	1	0	4	1	5	7	6	4	7	3	2	6	4	1	6	5	4	4
00:16	4	4	1	6	2	4	2	5	5	5	8	7	7	4	12	6	3	5	5	6	7	8	4	10
00:31	10	5	6	9	4	6	10	8	7	6	9	4	10	6	8	3	1	5	7	6	6	6	3	13
00:46	11	5	9	8	7	4	7	7	5	6	10	7	11	8	8	3	2	6	4	6	6	4	5	8
01:01	7	5	6	8	8	5	6	6	3	7	7	5	9	9	8	3	5	8	3	5	4	3	5	9
01:16	6	3	5	7	6	8	7	5	2	6	12	4	9	9	10	7	4	5	2	3	7	2	2	4
01:31	5	4	4	6	7	7	11	7	6	4	11	8	13	6	5	3	7	4	5	6	9	2	3	8